Table 2-1. Habitat Protection Provided by Current Closure Areas under the Status Quo

Closure Area	Year	Region	Closure Type	Closure Purpose	Major Gear Restricted	Main FMP Species Protected	Direct Intent of Closure	Indirect Effect(s) of Closure on EFH and HAPC	Habitats Protected (living and non-living)
Cape Edgecumbe Pinnacles Reserve (Sitka Pinnacles)	1999	GOA	year-round	Habitat	bottom trawl gear jig gear hook & line gear anchoring	Rockfish spp. adults Rockfish spp. juveniles	Closure to all groundfish commercial fishing and vessel anchoring to protect rare and ecologically important habitat. Troll fishing for salmon is allowed.	None.	epifauna HAPC pinnacle
Southeast Alaska No-Trawl Area	1998	GOA	year-round	Habitat	all trawl gear	Corals Sponges Groundfish	Adopted as part of the license limitation program but covers a vast area of deep water living substrates, including red tree coral.	Benthic habitat, HAPC, groundfish, and non-FMP crab previously affected by trawl gear are no longer subject to disturbance, damage, and/or direct and indirect mortality.	epifauna infauna nearshore slope shelf
Kodiak Red King Crab Savings Area	1986	GOA	year-round; seasonal	Habitat Species	bottom trawl gear scallop dredge gear	Red king crab adults	Closure to protect adult red king crab concentrations, juvenile rearing areas, migration patterns, and recruitment.	Benthic habitat, HAPC, and groundfish previously affected by bottom trawl and dredge gear are no longer subject to disturbance, damage, and/or direct and indirect mortality.	epifauna infauna shell hash slope shelf
Pribilof Islands Habitat Conservation Area	1995	BS	year-round	Habitat	all trawl gear scallop dredge gear	Blue king crab juveniles	Closure to protect important areas for juvenile blue king crab survival.	Benthic habitat, HAPC, and groundfish previously affected by gear are no longer subject to disturbance, damage, and/or direct mortality.	shell hash slope shelf
Bristol Bay Nearshore Closure	1997	BS	year-round	Habitat	all trawl scallop dredge gear	Red king crab juveniles	Closure to protect juvenile red king crab and rearing habitats. Expanded Area 512 closure (see below).	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by gear are no longer subject to disturbance, damage, and/or direct mortality.	Emergent epifauna shell hash HAPC shallows sand slope
Red King Crab Saving Area 512 (Middle Bristol Bay)	1987	BS	year-round	Habitat Species	all trawl gear scallop dredge gear	Red king crab juveniles and adults	Closure to protect high densities of red king crab adults and juvenile rearing habitats.	Benthic habitat, HAPC, juvenile crab, and groundfish previously affected by gear are no longer subject to disturbance, damage, and/or direct mortality.	epifauna infauna sand shelf
Red King Crab Saving Area 516 (Outer Bristol Bay)	1987	BS	seasonal; March 15 to June 15	Species	bottom trawl gear scallop dredge gear	Red king crab adults	Closure to protect high densities of red king crab adults and halibut.	Benthic habitat, HAPC, juvenile crab, and groundfish previously affected by bottom trawl and dredge gear are no longer subject to disturbance, damage, and/or direct mortality.	epifauna infauna sand/mud shelf

Table 2-1. Habitat Protection Provided by Current Closure Areas under the Status Quo (continued)

Closure Area	Year	Region	Closure Type	Closure Purpose	Major Gear Restricted	Main FMP Species Protected	Direct Intent of Closure	Indirect Effect(s) of Closure on EFH and HAPC	Habitats Protected (living and non-living)
Opilio and Tanner Crab Bycatch Limitation Zones	1997	BS	inseason PSC Cap	Species	trawl gear	Tanner Crab Adults Snow Crab Adults	Closed to specified groundfish fisheries when crab bycatch trigger is reached in order to reduce mortalities to crab and egg-laden mature crabs.	Benthic habitat, HAPC, and groundfish, and crab previously affected by bottom trawl gear are no longer subject to disturbance, damage, and/or direct mortality.	emergent epifauna shelf
Chinook Salmon Savings Area	1995	BS	trigger	Species	pelagic trawl gear	Chinook Salmon Late Juveniles - Marine Chinook salmon Adults - Marine	Areas closed to trawling should the chinook salmon bycatch exceed 48,000 chinook (a period of high chinook bycatch). For 2003, the cap is reduced to 29,000 and this applies only to vessels fishing for pelagic pollock. The accounting towards the cap begins Jan 1st and the area will be closed for the remainder of the year should the cap be reached.	Maturing chinook salmon previously recruiting to pelagic trawl gear are afforded greater protection to potentially reach maturity and spawning areas. Seasonal timing directly corresponds with migratory patterns and concentrations of maturing salmon within fishing areas.	
Chum Salmon Savings Area	1995	BS	seasonal: closed August; limited September through October 15	Species	trawl gear	Chum Salmon Late Juveniles - Marine Chum salmon Adults - Marine	To reduce excessive bycatch of other (mainly chum) salmon in groundfish trawl fisheries; the area is closed to trawling only during the month of August. The area is re-opened on September 1, but can be closed if the total bycatch of chum in the surrounding area should exceed 42,000 salmon.	Maturing chum (and other) salmon previously recruiting to pelagic trawl gear are afforded greater protection to potentially reach maturity and spawning areas. Seasonal timing directly corresponds with migratory patterns and concentrations of maturing salmon within fishing areas.	
Herring Savings Areas	1995	BS	trigger	Species	trawl gear	Bycatch species	Established to limit the amount of herring taken as bycatch in the trawl fisheries. Two of the areas are closed in the summer and one in the winter.	An important prey resource of groundfish are afforded greater protection during spawning and migratory concentrations.	nearshore offshore

Table 2-1. Habitat Protection Provided by Current Closure Areas under the Status Quo (continued)

Closure Area	Year	Region	Closure Type	Closure Purpose	Major Gear Restricted	Main FMP Species Protected	Direct Intent of Closure	Indirect Effect(s) of Closure on EFH and HAPC	Habitats Protected (living and non-living)
State of Alaska Nearshore Waters Closure	2000	GOA, AI, BS	year-round	Habitat	all bottom trawl gear	Nearshore adult and juvenile salmon, crab, shellfish, and groundfish.	Close all state waters (0 to 3 nm) to commercial bottom trawling to protect nearshore habitats and species.	None.	nearshore nursery and adult areas HAPC slope
Cook Inlet No-Trawl Zone	2001	GOA	year-round	Habitat	bottom trawl gear	Bycatch species	Prohibit non-pelagic trawling in Cook Inlet to control crab bycatch mortality and protect crab habitat in an area with depressed king and Tanner crab stocks. Includes areas in state waters.	Benthic habitat, HAPC, groundfish, and non-fmp crab previously affected by bottom trawl gear are no longer subject to disturbance, damage, and/or direct mortality.	shallows
Adak Scallop Closure Area	1995	AI	year-round	Habitat	scallop dredging	Scallops, groundfish, crab	Closure to prevent scallop dredging in biologically critical areas: reduce high bycatch of other species (i.e., crabs); avoid nursery for groundfish and shellfish; avoid sensitive habitats.	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by dredging are no longer subject to disturbance, damage, and/or direct mortality.	sand mud
Dutch Harbor Scallop Closure Area	1995	BS, AI	year-round	Habitat	scallop dredging	Scallops, groundfish, crab	Closure to prevent scallop dredging in biologically critical areas: reduce high bycatch of other species (i.e., crabs); avoid nursery for groundfish and shellfish; avoid sensitive habitats.	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by dredging are no longer subject to disturbance, damage, and/or direct mortality.	sand mud
Kodiak Scallop Closure Area	1995	GOA	year-round	Habitat	scallop dredging	Scallops, groundfish	Closure to prevent scallop dredging in biologically critical areas: reduce high bycatch of other species (i.e., crabs); avoid nursery for groundfish and shellfish; avoid sensitive habitats.	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by dredging are no longer subject to disturbance, damage, and/or direct mortality.	sand mud
Alaska Peninsula Scallop Closure Area	1995	GOA	year-round	Habitat	scallop dredging	Scallops, groundfish, crab	Closure to prevent scallop dredging in biologically critical areas: reduce high bycatch of other species (i.e., crabs); avoid nursery for groundfish and shellfish; avoid sensitive habitats.	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by dredging are no longer subject to disturbance, damage, and/or direct mortality.	sand mud

Table 2-1. Habitat Protection Provided by Current Closure Areas under the Status Quo (continued)

Closure Area	Year	Region	Closure Type	Closure Purpose	Major Gear Restricted	Main FMP Species Protected	Direct Intent of Closure	Indirect Effect(s) of Closure on EFH and HAPC	Habitats Protected (living and non-living)
Bering Sea Scallop Closure Areas	1995	BS	year-round	Habitat	scallop dredging	Scallops, groundfish, crab	Closure to prevent scallop dredging in biologically critical areas: reduce high bycatch of other species (i.e., crabs); avoid nursery for groundfish and shellfish; avoid sensitive habitats.	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by dredging are no longer subject to disturbance, damage, and/or direct mortality.	sand mud
Bogoslof Groundfish Closure Area	1992	BS	year-round	Marine Mammal	bottom trawl gear	Walleye pollock, Pacific cod, Atka mackerel	Closure to Walleye pollock, Atka mackerel, and Pacific cod commercial bottom trawl fisheries associated with the SSL protection measures.	Walleye pollock, Atka mackerel, and Pacific cod adults previously taken by their directed fishery are afforded greater protection to potentially reach maturity. Additionally, benthic habitats and HAPC will be subject to less bottom trawling intensity levels, but not total protection. Fisheries, other than these three, may still be prosecuted with bottom trawl gear.	nearshore nursery and adult areas HAPC nearshore slope shelf
Steller Sea Lion Closure Areas	2000	GOA, BS, AI	year-round	Marine Mammal	bottom trawl gear	Walleye pollock, Atka Mackerel, Pacific cod	SSL foraging areas for prey. Indirectly protecting EFH within the closed areas. 10- to 20-mile no-trawl zones around sea lion rookeries. Additional closures to protect critical habitat enacted in 1999.	Walleye pollock, Atka mackerel, and Pacific cod adults previously taken by their directed fishery are afforded greater protection to potentially reach maturity. Additionally, benthic habitats, HAPC, and other nearshore groundfish will be subject to less bottom trawling intensity levels, but not total protection. Fisheries, other than these three, may still be prosecuted with bottom trawl gear.	rock beaches pinnacles kelp nearshore
Steller Sea Lion Major Rookies	1995	GOA, BS, AI	year-round	Marine Mammal	all gear no vessel entry	Nearshore adult and juvenile salmon, crab, shellfish, and groundfish.	SSL Major Rockeries and Haulout areas used as foraging areas, reproductive areas, and social interactions.	Groundfish, shellfish, and crab are afforded protection from any disturbance, damage, or mortality.	nearshore
Walrus Islands Federal Closure	1995	BS	seasonal: April 1 through September 30	Marine Mammal	all gear	Groundfish and crab	All fishing vessels prohibited between 3 and 12 miles from to protect walrus in the water.	Benthic habitat, HAPC, and nearshore areas supporting juvenile and adult groundfish and crab previously affected by fishing are no longer subject to disturbance, damage, and/or direct mortality.	nearshore nursery and adult areas HAPC slope

Table 2-2. Chronology of Major Events Relative to the Development of this EIS for EFH since the Passage of the Sustainable Fisheries Act (SFA) in 1996

Year	Date	Action
1996	Oct.	SFA amends Magnuson-Stevens Act by requiring EFH provisions in FMPs.
1997	Dec.	NMFS publishes interim final rule for EFH provisions in FMPs (62 FR 66531).
1988	June	Council adopts final recommendations for 55/55/8/5/5 (EA to designate EFH and HAPC for all 5 FMPs).
1998	Oct.	Council initiates analysis to identify and protect HAPC areas.
1998	Oct.	Notice of availability of 55/55/8/5/5 published in FR (63 FR 56601).
1999	Jan.	NMFS approves 55/55/8/5/5 (64 FR 20216).
1999	June	Environmental groups challenge scope and substance of EAs for EFH.
2000	Feb.	Council reviews draft EA for HAPC protection and bifricates analysis.
2000	April	Council adopts part 1 of HAPC to define corals and sponge as prohibited species; part 2 (additional measures to identify and protect HAPC) to be developed with stakeholders.
2000	Sept.	Judge Kessler ruled that the EAs prepared for EFH were insufficient under NEPA.
2001	Jan.	Dr. Hogarth issues memo on guidance for developing EIS per (*AOC v. Daley*).
2001	Jan.	Stakeholder meetings held to develop part 2 of HAPC protection EA.
2001	Feb.	Part 2 of HAPC protection put on hold pending (*AOC v. Daley*) action.
2001	April	Council calls for nominations to EFH Committee in newsletter.
2001	May	EFH Committee meets for the first time (Kodiak).
2001	June	Council hears status report on EFH and receives first EFH Committee report.
2001	June	FR notice of intent to prepare and EIS for EFH for Alaska FMPs (66 FR 30396).
2001	June	Public scoping meetings in Kodiak, Unalaska, Anchorage, Seattle, Juneau, and Sitka.
2001	Aug.	EFH Committee meets for 2 days (Sitka).
2001	Oct.	EFH Committee meets (Seattle) and provides report to Council.
2001	Nov.	EFH Committee meets concurrently with NMFS EFH workshop for 3 days (Juneau).
2001	Dec.	Settlement agreement for *AOC v. Daley* filed.
2002	Jan.	Final rule for EFH published (67 FR 2343).
2002	Jan.	EFH Committee meets for 2 days (Juneau).
2002	March	EFH Committee meets for 1 day (Seattle); NMFS fishing effects workshop (2 days).
2002	May	EFH Committee meets for 2 days (Sitka).
2002	June	Council adopts preliminary alternatives for analysis to designate EFH and HAPC.
2002	Aug.	EFH Committee meets via teleconference.
2002	Sept.	EFH Committee meets for 3 days (Kodiak).
2002	Oct	EFH Committee meets for 1 day (Seattle).
2002	Oct.	Council adopts preliminary alternatives for analysis to minimize fishing effects on EFH.
2002	Oct.	EFH Committee holds stakeholder work sessions in Anchorage, Kodiak, and Seattle.
2002	Nov.	EFH Committee meets for 3 days (Anchorage).
2002	Dec.	Council adopts final alternatives for analysis.
2003	Jan.	EFH Committee meets for 1 day (Seattle).
2003	Feb.	Council adopts final alternatives for analysis (with minor modifications).
2003	April	Council reviews draft chapters and considers application of Alternative 5B methodology.

Table 2-3. Habitat Associations of Example Species

		Nearshore				Shelf			Slope						Stratum Reference						
						Inner	Middle	Outer	Upper		Inter-mediate		Lower	Basin							
Species	Life Stage[1/]	Freshwater	Estuarine	Intertidal	Subtidal	1-50m	51-100m	101-200m	201-300m	301-500m	501-700m	701-1000m	1001-3000m	>3000m	Shallows	Island Pass	Bay/Fjord	Bank	Flat	Edge	Gully
Golden King Crab	A							x	x	x	x	x				x		x			
	LJ												x	x				x			
	EJ												x	x							
	L																				
	E							x	x	x	x							x			
Pacific Cod	A					x	x	x	x	x								x	x	x	x
	LJ					x	x	x										x	x	x	
	EJ					x	x														
	L																				
	E					x	x	x													
Pacific Ocean Perch	A							x	x	x										x	x
	LJ					x	x	x	x	x										x	x
	EJ																				
	L					x	x	x	x	x											
	E																				
Weathervane Scallop	A						x														
	LJ						x														
	EJ																				
	L					x	x	x													
	E					x	x														
Chinook Salmon	FA	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
	MJ			x		x	x									x	x				
	ESJ		x	x		x									x						
	FJ	x																			
	L	x		x	x	x									x						
	E	x		x	x	x									x						

		Location							Oceanography					Substrate												
						Pelagic																				
Species	Life Stage[1/]	Surafce	Near surface	Semi-demersal	Demersal	1-200m (epi)	201-1000m (meso)	>1000m (bathy)	Upwelling areas	Gyres	Thermo/pycnocline	Fronts	Edges (ice, bath)	Organic Debris	Mud	Sand	Gravel	Mud & sand	Mud & gravel	Sand & mud	Gravel & mud	Gravel & sand	Gravel & sand & mud	Gravel & mud & sand	Cobble	Rock
Golden King Crab	A				x											x	x								x	x
	LJ															x	x								x	x
	EJ																									
	L				x																					
	E							x								x	x								x	x
Pacific Cod	A				x				x		x	x	x		x	x	x	x		x						
	LJ				x					x	x	x			x	x		x		x						
	EJ				x																					
	L									x		x														
	E				x					x					x	x		x		x						
Pacific Ocean Perch	A			x	x				x						x		x	x		x					x	
	LJ			x		x	x		x						x		x	x		x					x	
	EJ																									
	L		x			x	x		x																	
	E																									
Weathervane Scallop	A				x				x						x	x	x	x	x	x	x	x	x	x		
	LJ				x										x	x	x	x	x	x	x	x	x	x		
	EJ																									
	L					x																				
	E				x																					
Chinook Salmon	FA	x	x			x						x	x													
	MJ	x	x			x																				
	ESJ	x	x											x												
	FJ			x										x												
	L			x										x			x									
	E				x												x									

		Structure									Community												Temp/Salinity/[O]			
Species	Life Stage[1/]	Bars	Sinks	Slumps\Rockfalls\Debris	Channels	Ledges	Pinnacles	Reefs	Vertical Walls	Man-made	Algal Cover	Anenomes	Enchinoderms	Soft Coral	Hard Coral	Mollusca	Drift Algae\Kelp	Kelp	Polychaetes	Sea Grasses	Sea Onions	Tunicates	Temperature (Celsius)	Salinity (ppt)	Oxygen Conc (ppm)	Life Stage[1/]
Golden King Crab	A			x	x	x	x	x	x			x	x	x		x			x				<5	>30		A
	LJ			x	x	x	x	x	x			x	x	x		x			x				<5	>30		LJ
	EJ																						<5	>30		EJ
	L																						<5	>30		L
	E			x	x	x	x	x	x			x	x	x		x			x				<5	>30		E
Pacific Cod	A																									A
	LJ																									LJ
	EJ																									EJ
	L																									L
	E																						3-6	13-23		E
Pacific Ocean Perch	A					x									x											A
	LJ					x									x											LJ
	EJ													x	x					x						EJ
	L													x						x						L
	E																									E
Weathervane Scallop	A																									A
	LJ																									LJ
	EJ																									EJ
	L																									L
	E																									E
Chinook Salmon	FA	x			x	x	x	x	x	x													<15			FA
	MJ	x			x	x	x	x	x	x							x	x		x			<15			MJ
	ESJ																			x						ESJ
	FJ																x	x								FJ
	L																			x						L
	E																			x			>4			E

[1/] Lifestage:
Golden king crab, Pacific cod, Pacific ocean perch, and scallop: E = eggs, L = larvae, EJ = early juvenile, LJ = late juvenile, A = adult
Chinook: E = eggs, L = fry, FJ - freshwater juvenile, ESJ = estuarine juvenile, M = marine juvenile, FA = freshwater adult

Table 2-4. Reproductive Traits of Example Species

		Reproductive Traits																									
		Age at Maturity				Fertilization/Egg Development					Spawning Behavior						Spawning Season										
		Female		Male																							
Species	Life Stage[1/]	50%	100%	50%	100%	External	Internal	Oviparous	Ovoviviparous	Viviparous	Batch Spawner	Broadcast Spawner	Egg Case Deposition	Nest Builder	Egg/Young Guarder	Egg/Young Bearer	January	February	March	April	May	June	July	August	September	October	November	December
Golden King Crab	M	6+			6+													x	x	x	x	x	x	x				
Pacific Cod	A	5		5		x					x						x	x	x	x							x	x
Pacific Ocean Perch	A	11					x			x	x														x	x	x	x
Weathervane Scallop	A					x						x									x	x	x					
Chinook Salmon	FA	3	7	1	7	x		x						x							x	x	x	x	x			

[1/] Lifestage: M = mature, A = adult, FA = freshwater adult

Table 2-5. Food Habits of Example Species

Predator to

Species	Life Stage[1/]	Algae	Plants	Plankton	Zooplankton	Diatoms	Sponges	Eusphausiid	Hydroids	Amphipoda	Copepods	starfish	Polychaetes	squid	Philodae (gunnels)	Bi-valves	Mollusks	Crustaceans	Ophiuroids (brittle stars)	shrimps, mysidacae	sand lance	Osmerid (eulachon)	herring	Myctophid (lantern fishes)	Cottidae (sculpins)	Arrowtooth or Yellowfin	Salmon	Cod	Pollock	Halibut
Golden King Crab	M		X				X												X											
	LJ																													
	EJ																													
	L																													
	E																													
Pacific Cod	A									X			X	X				X		X	X		X			Y	X		X	X
	LJ									X			X	X				X		X	X		X			Y	X		X	X
	EJ							X												X										
	L										X																			
	E																													
Pacifc Ocean Perch	A							X																						
	LJ							X			X																			
	EJ																													
	L			X	X																									
	E																													
Weathervane Scallop	A																													
	LJ																													
	EJ																													
	L																													
	E																													
Chinook Salmon	FA																													
	MA							X						X					X	X	X	X						X	X	
	MJ				X			X						X					X	X	X	X	X					X	X	
	ESJ														X					X	X	X								
	FJ																													
	L																													
	E																													

Prey of

Species	Jellyfish	Starfish	Chaetognaths (arrowworms)	Crab	Herring	Salmon	Pollock	Pac fic Cod	Rockfish	Rock Sole	Flathead Sole	Yellowfin sole	Arrowtooth flounder	Hailbut	Salmon Shark	Northern Fur Seal	Harbor Seal	Steller sea lion	Harbor Porposie	Dalls Porpoise	Beluga whale	Killer Whale	Minke whale	Eagles	Murres	Puffin	Kittiwake	Gull	Terrerstrial Mammals	Life Stage[1/]
Golden King Crab																														M
																														LJ
																														EJ
																														L
																														E
Pacific Cod														X	X	X		X	X		X	X								A
														X	X	X		X	X		X	X						X		LJ
														X	X	X		X	X		X	X				X		X		EJ
																										X				L
																														E
Pacifc Ocean Perch																														A
																														LJ
																														EJ
																														L
																														E
Weathervane Scallop																														A
																														LJ
																														EJ
																														L
																														E
Chinook Salmon																								X					X	FA
															X	X	X	X			X	X		X						MA
	X				X	X	X	X	X					X	X		X	X			X			X	X	X	X	X		MJ
						X								X			X							X	X	X	X	X		ESJ
						X																		X						FJ
	X				X	X	X	X																			X	X		L
						X																		X				X		E

[1/] Lifestage:

Golden king crab, Pacific cod, Pacific ocean perch, and scallop: E = eggs, L = larvae, EJ = early juvenile, LJ = late juvenile, A = adult

Chinook: E = eggs, L = fry, FJ - freshwater juvenile, ESJ = estuarine juvenile, M = marine juvenile, FA = freshwater adult

Table 2-6. Comparison of Alternatives to Identify HAPC, with Examples of Sites/Types/Areas that Could be Identified as HAPC in a Subsequent Process

	Alternative 1 No HAPC	Alternative 2 Status Quo	Alternative 3 Site Based Concept	Alternative 4 Type/Site Based Concept	Alternative 5A Species Core Area
Description	Would remove existing description and identification of HAPC from FMPs.	Keeps existing HAPC types: 1. Living substrates in shallow waters 2. Living substrates in deep waters. 3. Freshwater areas used by anadromous fish.	Would remove existing description and identification of HAPC from FMPs. Would allow geographically defined sites to be designated as HAPC in subsequent process.	Would remove existing description and identification of HAPC from FMPs. Would allow geographically defined sites to be designated as HAPC, but only those that are of a specfic habitat type, in subsequent process.	Would remove existing description and identification of HAPC from FMPs. Would allow geographically defined sites to be designated as HAPC in subsequent process. These sites would be defined based on the highest productivity of habitat used for FMP species, for life stages where information is available.
Objectives	All EFH is equally important for purposes of consultations or fishery management.	Defines vulnerable habitat for use in consultations and fishery management.	Defines specific sites of vulnerable or especially ecologically important habitat for use in consultations and fishery management.	Defines types and specific areas of vulnerable or especially ecologically important habitat for use in consultations and fishery management.	Defines the most productive habitat for individual species for use in consultations and fishery management.
Subsequent process	None.	FMPs could be amended to add or delete habitat types as HAPC.	A nomination process could be used to propose sites for designation.	A nomination process could be used to propose types and individual sites for designation.	Species core areas would be based on scientific data as it becomes available.
Examples for comparison (not designated by the alternatives - but for possible consideration in a subsequent process)	Corals: No HAPC designated. Ppinnacles/seamounts: No HAPC designated. BBRKC: No HAPC designated. Slope: No HAPC designated.	Corals: Would be considered HAPC because they are considered living substrates. Pinnacles/seamounts: Would not be considered HAPC. BBRKC: Would not be considered HAPC. However, young red king crab use living substrate. Slope: Would not be considered HAPC.	Corals: Specific sites with coral could be designated as HAPC. Pinnacles/seamounts: Specific pinnacles and seamounts could be designated as HAPC. BBRKC: Some portion of the area could be designated as a HAPC site. Slope: Some portions of the slope area could arguably be designated as a HAPC site.	Corals: Corals could be an HAPC type. Specific Sites with coral could be designated as HAPC. Pinnacles/seamounts: Seamounts, and possibly pinnacles, could be an HAPC type. Specific seamounts and pinnacles could thus be designated as HAPC. BBRKC: Would not be a HAPC type, and therefore no HAPC sites could be designated. Slope: Would not be a HAPC type, and therefore no HAPC sites could be designated.	Corals: Not an FMP species, thus HAPC cannot be designated. Pinnacles/seamounts: Unlikely to be a core area of any FMP species, thus HAPC cannot be designated BBRKC: HAPC areas could be designated for this species. Slope: The slope is likely to be core area for some FMP species, so HAPC areas could be designated.

Table 2-7. Crosswalk of Objectives and Management Measures Contained in the Alternatives to Minimize the Effects of Fishing on EFH

Management Measures	Alternative 1 No Action	Alternative 2 GOA Slope Trawl Closures	Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish	Alternative 4 Bottom Trawl Closures	Alternative 5A Expanded Bottom Trawl Closures	Alternative 5B: AI Sponge and Coral Closures	Alternative 6 20% Closures to Bottom Tending Gear
Objectives	Conserve, restore, and maintain habitat for fish productivity, by managing fisheries with: - gear restrictions - marine protected areas - harvest limits - effort limitation & reduction - rationalization programs - other regulations	Allow some recovery of some GOA slope area by restricting the higher impact fishery. Provide incentive to fishers to convert to gear with lower sensitivity. Limit restrictions to what might be 'practicable.'	Allow more recovery of all GOA slope area by restricting higher impacts fisheries. Provide incentive to fishers to convert to gear with lower sensitivity. Limit restrictions to what might be 'practicable.'	Prevent expansion of bottom trawl fisheries (BS). Allow a portion of all areas to recover from higher impact fisheries. Reduce contact of gear with bottom (BS trawl). Limit restrictions to what might be 'practicable.'	Prevent expansion of bottom trawl fisheries (BS). Allow a larger portion of all areas to recover from higher impact fisheries. Reduce contact of gear with bottom (BS trawl). Limit restrictions to what might be 'practicable.'	Prevent expansion of bottom trawl fisheries (BS, AI). Allow a larger portion of all areas to recover from higher impact fisheries. Control effort within open areas (AI). Reduce bycatch of epifauna. Reduce contact of gear with bottom (BS trawl).	Allow 20% of all areas to fully recover from any and all habitat impacts due to fisheries.
Gear Regulations	Groundfish: Only trawl, hook and line, and pot gear allowed. BSAI pollock limited to pelagic trawls only, bio-degradable panels and maximum openings for pot gear. Scallop: Only dredge and dive gear allowed, dredge size limited to 15 ft, 4" minimum ring diameter. Crab: Only pot gear allowed, pot limits, 10' maximum size, bio-degradable panels, escape rings, pots must be longlined in AI. Salmon: Area, fishery, and gear type specific regulations.	Groundfish: Status quo Scallop: Status quo Crab: Status quo Salmon: Status quo	Groundfish: Prohibit bottom trawl gear for targeting GOA slope rockfish species complex [POP, shortraker/ rougheye, northern, other slope rockfish] on the upper slope. Scallop: Status quo Crab: Status quo Salmon: Status quo	Groundfish: Measures from Alternative 1, plus: 1. A requirement that all bottom trawls used in the Bering Sea must have bobbins or discs on trawl sweeps and footropes. Scallop: Status quo Crab: Status quo Salmon: Status quo	Groundfish: Measures from Alternative 1, plus: 1. A requirement that all bottom trawls used in the Bering Sea must have bobbins or discs on trawl sweeps and footropes. 2. Bottom trawl gear prohibited for GOA slope rockfish. Scallop: Status quo Crab: Status quo Salmon: Status quo	Groundfish: Measures from Alternative 5A. Scallop: Status quo Crab: Status quo Salmon: Status quo	Groundfish: Status quo. Scallop: Status quo Crab: Status quo Salmon: Status quo
Gear Conversion	Conversion from trawl to fixed gear only allowed through permit transfer.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) in GOA slope closure areas.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) to fish for GOA slope rockfish.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) in GOA slope closure areas.	Allow vessels endorsed for trawl gear to use fixed gear (or pelagic trawls) in GOA slope closure areas.	Same as Alternative 5A	Status quo

Table 2-7. Crosswalk of Objectives and Management Measures Contained in the Alternatives to Minimize the Effects of Fishing on EFH (continued)

Management Measures	Alternative 1 No Action	Alternative 2 GOA Slope Trawl Closures	Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish	Alternative 4 Bottom Trawl Closures	Alternative 5A Expanded Bottom Trawl Closures	Alternative 5B: AI Sponge and Coral Closures	Alternative 6 20% Closures to Bottom Tending Gear
Scientific Monitoring	Not an explicit part of the FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Special closure areas would be established in the BSAI and GOA to allow for monitoring of fishing gear effects and mitigation success. These areas may apply to all fisheries under all FMPs.	Requires plan to include seafloor mapping, benthic research, habitat impacts of all gears, annual reports, EFPs.	Status quo. By design, no take marine reserves provide a baseline for scientific monitoring.
Fleet monitoring	Groundfish: Observer coverage required for all vessels >60'. VMS required on all vessels fishing for pollock, mackerel, and cod. Scallops: 100% coverage on all vessels. Crab: 100% coverage on c/ps; random coverage on c/vs. Salmon: Coverage for MMPA monitoring as needed.	Status quo	Status quo	Status quo	Status quo	Status quo, with the following for groundfish in the AI area only: 100% observer coverage and VMS required on all vessels, with use of CADRES observer program.	Status quo

Table 2-7. Crosswalk of Objectives and Management Measures Contained in the Alternatives to Minimize the Effects of Fishing on EFH (continued)

Management Measures	Alternative 1 No Action	Alternative 2 GOA Slope Trawl Closures	Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish	Alternative 4 Bottom Trawl Closures	Alternative 5A Expanded Bottom Trawl Closures	Alternative 5B: AI Sponge and Coral Closures	Alternative 6 20% Closures to Bottom Tending Gear
Closure Areas	Groundfish: All trawling prohibited year-round in nearshore Bristol Bay, Pribilof Islands area, Southeast AK. No bottom trawling in red king crab savings area, Cook Inlet, Kodiak type 1 crab zones, and most state waters. These areas total about 90,000 nm^2. Many seasonal trawl closures to reduce bycatch. Numerous sea lion closure areas closed to trawl, longline, pot gear for cod, pollock, mackerel fishing. No bottom fishing of any kind on Sitka Pinnacles. Scallops: Year-round closures in Adak, Unalaska, AK peninsula, Kodiak, Cook Inlet, PWS,and SE AK areas. Crab: Year-round closures for king crab 10nm around St. Lawrence, King, and Little Diomede Islands. A 3 nm closure around St. Matthew, and an area closed in Norton Sound. Salmon: Area, fishery, and gear type specific regulations.	Measures from Alternative 1, plus additional closures for groundfish fisheries, would be established as follows: *GOA*: Bottom trawl gear prohibited for rockfish year-round in designated areas of the upper and middle slope (200m-1000m). Scallops, Crab, and Salmon: Status quo	Measures from Alternative 1, plus additional closures for groundfish fisheries, would be established as follows: *GOA*: Bottom trawl gear prohibited for rockfish year-round on the ENTIRE upper and middle slope (200 to 1,000 m).	Measures from Alternative 1, plus additional closures for groundfish fisheries, would be established as follows: *Bering Sea*: Bottom trawl gear prohibited year-round outside designated open area. Within open area, 25% of blocks north and west of Pribilof Islands closed to bottom trawling for 10 years on a 40-year rotating basis. *Aleutian Islands:* Bottom trawl gear prohibited year-round in areas of Stalemate Bank, Bowers Ridge, Seguam Foraging Area, and Semispopochnoi Island. *GOA*: Bottom trawl gear prohibited year-round for rockfish fisheries in designated areas of the slope (200 to 1,000 m). Scallops, Crab, and Salmon: Status quo	Measures from Alternative 1, plus additional closures for groundfish fisheries, would be established as follows: *Bering Sea:* Bottom trawl gear prohibited year-round outside designated open area. Within open area, 33 1/3% of blocks north and west of Pribilof Islands closed to bottom trawling for 5 years on a 15-year rotating basis. *Aleutian Islands:* Bottom trawl gear prohibited year-round in areas of Stalemate Bank, Bowers Ridge, Seguam Foraging Area, and Yunaska Island. These closures extend to management unit boundaries. *GOA:* Bottom trawl gear prohibited year-round for all groundfish fisheries in designated areas of the slope (200 to 1,000 m). Additionally, bottom trawl gear prohibited for rockfish year-round on the ENTIRE upper and middle slope (200 to 1,000 m). Scallops, Crab, and Salmon: Status quo	Same as Alternative 5A for GOA and Bering Sea, but for the AI as below: *Aleutian Islands:* Bottom trawl gear prohibited year-round in areas of with high coral and sponge bycatch rates and low target species CPUEs. Also, all previously untrawled areas would be closed.	Measures from Alternative 1, plus for groundfish, halibut, crab, and scallop fisheries, a total of 20% of the BS, AI, and GOA would be set aside as no bottom tending gear marine protected areas. The marine protected areas may overlap with existing closures.

Table 2-7. Crosswalk of Objectives and Management Measures Contained in the Alternatives to Minimize the Effects of Fishing on EFH (continued)

Management Measures	Alternative 1 No Action	Alternative 2 GOA slope trawl closures	Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish	Alternative 4 Bottom Trawl Closures	Alternative 5A Expanded Bottom Trawl Closures	Alternative 5B: AI Sponge and Coral Closures	Alternative 6 20% Closures to Bottom Tending Gear
Effort Limitation	Limited Entry Permits required for groundfish (with area, species, and gear endorsements), scallops (9 total, with area endorsements) crab (with species endorsements), and salmon fisheries (area, gear, and fishery specific). IFQs for sablefish and halibut fisheries and CDQs for all groundfish and crab. AFA Cooperatives for BSAI pollock.	Status quo, except that vessels endorsed for trawl gear can use fixed gear in GOA slope trawl closure areas.	Status quo, except that vessels endorsed for trawl gear can use fixed gear to fish for GOA slope rockfish.	Status quo, except that vessels endorsed for trawl gear can use fixed gear in GOA slope trawl closure areas.	Status quo, except that vessels endorsed for trawl gear can use fixed gear in GOA slope trawl closure areas.	Same as Alternative 5A.	Status quo
Catch and Bycatch Limits	BSAI Groundfish: Catch quotas for all species, annual catch limited to 2 million mt. Bycatch limits for halibut, opilio crab, bairdi crab, red king crab, chinook salmon, other salmon, and herring. Fishing for forage fish prohibited. GOA Groundfish: Catch quotas for all species. Bycatch limits for halibut. Fishing for forage fish prohibited. Scallops: Catch quotas by region. Bycatch limits for king crab and bairdi crab; also opilio crab and in the Bering Sea. Crab: Catch quotas by fishery. Salmon: Area, fishery, and gear type specific regulations.	Status quo	Status quo	Status quo	Status quo	Would implement in AI region, fishery and area specific coral/bryozoan and sponge bycatch limits that close specific areas to trawling if exceeded. Would reduce the groundfish TACs by the amount that historically came from the closure areas designated under this option.	Status quo

Table 3.2-1. Halibut Bycatch Mortality (mt) in the GOA, 1995-2001

Year	Trawl Shallow Complex	Trawl Deep Complex	Total Trawl	Total Trawl
1995	1,008	1,043	2,051	330
1996	1,010	937	1,946	172
1997	1,146	865	2,011	217
1998	1,249	779	2,028	296
1999	1,321	817	2,137	348
2000	1,019	869	1,888	276
2001	615	663	1,277	278

Note: 2001 data are through July 19, 2001.

Source: NMFS Alaska Region prohibited species catch estimates

Table 3.2-2. Halibut Bycatch in BSAI Trawl Fisheries for 2000 and First Half of 2001

	2000			2001		
BSAI Trawl Fishery Group	Bycatch (mt)	Cap (mt)	Percent	Bycatch (mt)	Cap (mt)	Percent
Pacific cod	935	1,434	65	553	1,334	41
Yellowfin sole	957	886	108	510	911	56
Rock sole/Flathead sole/Other Flats	885	779	114	758	854	89
Pollock/Atka mackerel/Other Spp.	339	232	146	97	232	42
Rockfish	11	69	16	31	69	45
Turbot/Arrowtooth flounder/Sablefish	80	0	0	63	0	0
Total	**3,208**	**3,400**	**94**	**2,011**	**3,400**	**59**

Note: 2001 data are from January 20, 2001 through July 19, 2001.

Source: NMFS Alaska Region prohibited species catch estimates

Table 3.2-3. Seasonal Halibut Bycatch in BSAI Fixed Gear Fisheries in 2000 and First Half of 2001

	2000			2001		
BSAI Fixed Gear Fishery Groups	Bycatch	Cap (mt)	Percent	Bycatch	Cap (mt)	Percent
Pacific cod, Hook & Line	711	673	106	228	755	30
Other species, Hook & Line, Jig	123	159	77	53	78	8
Total	**834**	**832**	**100**	**281**	**833**	**34**

Note: 2001 data taken from January 20, 2001 through July 19, 2001.

Source: NMFS Alaska Region prohibited species catch estimates

Table 3.2-4. Bycatch of Red King Crab in Zone 1 BSAI Fisheries

	2000			2001		
	Number of Crab	PSC Cap (number of crab)	Percent	Number of Crab	PSC Cap (number of crab)	Percent
Rock Sole/Other Flatfish	53,389	64,775	82	23,267	64,782	36
Pacific Cod	4,379	11,656	38	1,733	11,664	15
Yellowfin Sole	13,020	11,655	112	3,942	11,664	34
Pollock/Atka	0	1,660	0	93	1,615	6
RKC Saving Area	na	22,665	na	na	22,674	na
Total	**70,787**	**89,726**	**79**	**29,036**	**89,725**	**32**

Note: 2001 data are from January 20, 2001, through July 19, 2001.

Source: NMFS Alaska Region prohibited species catch estimates

Table 3.2-5. Herring Bycatch in the BSAI Area in 2000 and 2001

	2000			2001		
BSAI Trawl Fishery Group	**Bycatch (mt)**	**Cap (mt)**	**Percent**	**Bycatch (mt)**	**Cap (mt)**	**Percent**
Midwater Pollock	482	1,616	30	13	1,184	1
Pacific Cod	1	24	4	4	20	22
Yellowfin Sole	25	169	15	11	139	8
Rockfish	0	9	0	0	7	0
Other	3	38	8	0	146	0
Rock sole/Other flatfish	2	24	7	9	20	45
Turbot/Arrowtooth flounder	0	11	0	0	9	4
Total	**512**	**1,891**	**27**	**38**	**1,525**	**2**

Note: 2001 data are from January 20, 2001 through July 19, 2001.

Source: NMFS Alaska Region prohibited species catch estimates

Table 3.2-6. Endangered and Threatened Species under the ESA that May be Present in the BSAI

Common Name	Scientific Name	ESA Status
Northern Right Whale	*Balaena glacialis*	Endangered
Bowhead Whale	*Balaena mysticetus*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Snake River Sockeye Salmon	*Oncorhynchus nerka*	Endangered
Short-tailed Albatross	*Diomedia albatrus*	Endangered
Steller Sea Lion	*Eumetopias jubatus*	Endangered and Threatened [1]
Snake River Fall Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Lower Columbia River Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon	*Oncorhynchus tshawytscha*	Endangered
Upper Columbia River Steelhead	*Onchorynchus mykiss*	Endangered
Snake River Basin Steelhead	*Onchorynchus mykiss*	Threatened
Lower Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Upper Willamette River Steelhead	*Onchorynchus mykiss*	Threatened
Middle Columbia River Steelhead	*Onchorynchus mykiss*	Threatened
Spectacled Eider	*Somateria fishcheri*	Threatened
Steller's Eider	*Polysticta Stelleri*	Threatened

Note:

[1] Steller sea lions are listed as endangered west of Cape Suckling and threatened east of Cape Suckling.

Source: NMFS 2001a

Table 3.2-7. Summary of Salmonid Species Listed and Proposed for Listing under the Endangered Species Act

Species	Evolutionarily Significant Unit	Status	Federal Register Notice	
Chinook Salmon	Sacramento River Winter-Run	Endangered	59 FR 440	01/04/94
(*O. tshawytscha*)	***Snake River Fall***	Threatened	57 FR 14653	04/22/92
	Snake River Spring/Summer	Threatened	57 FR 14653	04/22/92
	Puget Sound	Threatened	64 FR 14307	03/24/99
	Lower Columbia River	Threatened	64 FR 14307	03/24/99
	Upper Willamette River	Threatened	64 FR 14307	03/24/99
	Upper Columbia River Spring	Endangered	64 FR 14307	03/24/99
Chum Salmon	Hood Canal Summer-Run	Threatened	64 FR 14570	03/25/99
Coho Salmon	Central California Coast	Threatened	61 FR 56138	10/31/96
(*O. kisutch*)	S. Oregon/N. California Coast	Threatened	62 FR 24588	05/06/97
Sockeye Salmon	Snake River	Endangered	56 FR 58619	11/20/91
Steelhead	Southern California	Endangered	62 FR 43937	08/18/97
(*O. mykiss*)	South-Central California	Threatened	62 FR 43937	08/18/97
	Central California Coast	Threatened	62 FR 43937	08/18/97
	Upper Columbia River	Endangered	62 FR 43937	08/18/97
	Snake River Basin	Threatened	62 FR 43937	08/18/97
	Lower Columbia River	Threatened	63 FR 13347	03/19/98
	Central Valley California	Threatened	63 FR 13347	03/19/98
Cutthroat Trout Sea-Run (*O. clarki clarki*)	Southwest Washington/Columbia River	Proposed Threatened	64 FR 16397	04/5/99

Note: Evolutionarily significant units (in bold italic) represent those likely to range into marine waters off Alaska.

Source: NMFS 2001a

Table 3.2-8. Coded Wire Tag Recoveries of Listed Salmon Species Surrogate Stocks from 1984 through 1999 in the GOA and BSAI Groundfish Fisheries

Year	GOA	BSAI	ESU
1999	16	1	UWR
1998	4	0	UWR
1998	1	0	LCR
1997	0	0	UWR
1996	1	1	UWR
1995	2	0	UWR
1994	3	0	UWR
1994	2	0	LCR
1993	14	0	UWR
1999	1	0	LCR
1992	2	0	UWR
1992	2	0	LCR
1991	1	0	UWR
1990	4	0	UWR
1990	1	0	LCR
1988	0	0	-
1987	1	0	LCR
1986	0	0	-
1985	1	0	LCR
1984	1	0	LCR
1984	10	0	UWR

Notes: No data yet available for 2000 or 2001. UWR=Upper Willamette River Chinook, LCR=Lower Columbia River Chinook. Fisheries before 1990 were foreign joint-venture (not under management of Magnuson-Stevens Act).

Source: NMFS CWT database

Table 3.2-9. The Diet of Selected Eastern Bering Sea Shelf Groundfish Species

Rank	Pollock	Cod	Arrowtooth Flounder	Pacific Halibut	Greenland Halibut
1	Euphausiids (44.9)	Pollock (49.1)	Pollock (67.4)	Pollock (53.9)	Pollock (74.8)
2	Pollock (17.0)	Offal (12.1)	Miscellaneous fish (15.3)	Flatfish (9.0)	Squid (11.1)
3	Copepods (11.4)	Brachyuran crab (10.3)	Herring (5.4)	Brachyuran crabs (7.8)	Miscellaneous fish (6.2)
4	Shrimp (8.0)	Miscellaneous fish (7.6)	Offal (3.6)	Misc. fish (7.6)	Offal (4.1)
5	Amphipods (4.1)	Flatfish (7.1)	Amphipods (1.8)	Anomuran crabs (4.6)	Flatfish (1.2)
6	Mysids (3.2)	Anomuran crabs (3.4)	Squid (1.8)	Cod (4.3)	Cod (0.9)
7	Miscellaneous fish (2.8)	Shrimp (2.5)	Euphausiids (1.5)	Offal (4.1)	Herring (0.7)
8	Offal (1.1)	Polychaete worms (1.0)	Flatfish (1.0)	*Sand lance* (2.2)	*Myctophids* (0.2)
9	*Capelin* (0.7)	*Sand lance* (0.8)	Scorpaenids (0.3)	*Capelin* (1.8)	Shrimp (0.2)
10	*Sand lance* (0.5)	Gastropods (0.5)	*Capelin* (0.2)	Herring (1.1)	Cyclopterids (0.2)
Other forage fish	*Osmerids* (<0.1)	*Capelin* (0.1)	*Eulachon* (0.2)	*Osmerids* (0.1)	*Bathylagids* (0.1)
	Bathylagids (<0.1)	*Osmerids* (<0.1)	*Osmerids* (0.1)	*Eulachon* (<0.1)	*Osmerids* (<0.1)
	Myctophids (<0.1)	*Bathylagids* (<0.1)	*Myctophids* (<0.1)		*Sand lance* (<0.1)
	Eulachon (<0.1)	*Myctophids* (<0.1)	*Sand lance* (<0.1)		
		Eulachon (<0.1)			

Rank	Yellowfin Sole	Rock Sole	Alaska Plaice	Flathead Sole	Skates
1	Echiuroid worms (22.4)	Polychaete worms (44.9)	Polychaete worms (55.5)	Echinoderms (28.3)	Pollock (56.7)
2	Bivalves (18.5)	*Sand lance* (14.3)	Bivalves (11.1)	Pollock (25.6)	Miscellaneous fish (9.9)
3	Polychaete worms (18.1)	Echiuroid worms (11.0)	Echiuroid worms (10.7)	Shrimp (12.8)	Brachyuran crabs (8.8)
4	Amphipods (7.0)	Amphipods (7.2)	Sipunculid worms (10.7)	Miscellaneous fish (5.8)	Flatfish (6.7)
5	Echinoderms (3.7)	Bivalves (5.1)	Amphipods (4.6)	Euphausiids (4.5)	Shrimp (5.5)
6	Anomuran crabs (3.7)	Sipunculid worms (5.0)	Priapulid worms (2.8)	Offal (3.9)	Offal (5.2)
7	Euphausiids (3.2)	Echinoderms (2.8)	Exhinoderms (2.0)	Mysids (3.5)	Anomuran crabs (3.1)
8	Shrimp (3.1)	Shrimp (2.0)	Unidentified crustaceans (0.6)	Bivalves (3.1)	Ampipods (1.3)
9	Gastropods (2.6)	Miscellaneous fish (1.6)	*Sand lanc*e (0.5)	Anomuran crab (2.5)	*Sand lance* (0.7)
10	Brachyuran crabs (2.4)	Priapulid worms (1.5)	Brachyuran crabs (0.2)	Brachyuran crab (2.3)	Cod (0.4)
Other forage fish	*Sand lance* (0.6)	*Osmerids* (<0.1)	N/A	*Capelin* (1.3)	*Capelin* (0.1)
	Bathylagids (<0.1)			*Sand lance* (0.5)	*Sandfish* (0.1)
	Capelin (<0.1)			*Osmerids* (0.1)	*Myctophids* (<0.1)
				Myctophids (<0.1)	

Notes: Forage fish in the diet appear in italics.

Numbers in parentheses represent percent by weight contribution to the diet.

N/A indicates no other forage fish in the diet.

Source: NMFS, unpublished data; NMFS GROUNDFISH SEIS 2003

Table 3.2-10. Diet of Selected Eastern Bering Sea Slope Groundfish Species

Rank	Greenland Halibut	Flathead Sole	Arrowtooth Flounder	Pollock	Cod
1	Pollock (58.3)	Echinoderm (49.6)	Pollock (55.4)	Euphausiids (26.4)	Pollock (51.4)
2	Squid (18.5)	Offal (23.7)	Miscellaneous fish (15.9)	Shrimp (16.4)	Offal (9.7)
3	Offal (11.9)	Scorpaenidae (10.1)	Squid (11.3)	Pollock (15.8)	Miscellaneous fish (9.1)
4	Miscellaneous fish (5.0)	Shrimp (4.2)	Herring (11.1)	Squid (8.3)	Shrimp (8.6)
5	Cyclopterids (2.7)	Miscellaneous fish (4.0)	Shrimp (4.6)	Miscellaneous fish (7.0)	Brachyuran crab (6.2)
6	Flatfish (0.8)	Pollock (2.9)	Offal (0.7)	*Bathylagids* (7.0)	Flatfish (4.0)
7	Herring (0.6)	Polychaete worms (1.6)	Echinoderm (0.3)	*Myctophids* (5.5)	Herring (3.5)
8	*Bathylagids* (0.4)	Brachyuran crab (1.4)	Miscellaneous Unidentified (0.3)	Offal (3.7)	Squid (1.9)
9	*Myctophids* (0.4)	Squid (0.4)	Euphausiids (0.2)	Copepods (2.2)	Cod (1.0)
10	Anomuran crab (0.1)	Mysid (0.4)	*Myctophids* (0.2)	Herring (2.5)	Polychaete worms (0.9)
Other forage fish	N/A	*Myctophids* (0.3)	N/A	*Osmerids* (0.1)	*Bathylagids* (<0.1)
		Bathylagids (0.1)		*Sand lance* (<0.1)	

Notes: Forage fish in the diet appear in italics.

Numbers in parentheses represent percent by weight contribution to the diet.

N/A **B** Indicates no other forage fish in the diet.

Source: Lang and Livingston 1996; NMFS GROUNDFISH SEIS 2003

Table 3.2-11. Percent by Weight of Important Prey Consumed by Groundfish in the Gulf of Alaska

	Predator										
Prey	Arrowtooth Flounder	Pacific Halibut	Sablefish	Pacific Cod	Pollock	Shortspine Thornyhead	Rougheye Rockfish	Shortraker Rockfish	Dusky Rockfish	Pacific Ocean Perch	Northern Rockfish
Pollock	66	57	24	7	2	1	0	0	0	0	0
Herring	9	0	2	-	-	0	0	0	0	0	0
Capelin	8	1	-	2	13	1	0	0	0	0	0
Pacific sand lance	-	1	-	-	-	0	0	0	0	0	0
Eulachon	1	-	6	-	0	0	0	0	0	0	0
Atka mackerel	1	0	0	0	0	0	0	0	0	0	0
Bathylagid	0	0	0	0	-	0	0	0	0	0	0
Myctophid	0	0	-	0	0	0	0	18	0	1	0
Tanner crab	0	6	-	12	0	1	2	0	0	-	-
Pandalids	4	-	4	9	19	54	51	0	4	2	0
Cephalopods	2	5	8	10	3	1	21	82	6	1	-
Offal	1	7	29	13	0	0	0	0	0	0	0
Euphausiids	3	0	7	1	39	0	2	0	69	87	96
Calanoid copepods	0	0	0	0	1	0	0	0	2	2	3

Notes: - means less than 1 percent

Source: Yang and Nelson 2000; NMFS GROUNDFISH SEIS 2003

Table 3.2-12. Percent by Weight of Important Prey Consumed by Groundfish in the Aleutian Islands

	Predator										
Prey	Arrowtooth Flounder	Pacific Halibut	Pacific Cod	Greenland Turbot	Pollock	Shortspine Thornyhead	Rougheye Rockfish	Shortraker Rockfish	Atka Mackerel	Pacific Ocean Perch	Northern Rockfish
Atka mackerel	44	12	27	0	0	0	0	0	0	0	0
Pollock	13	19	17	1	0	0	0	0	2	0	0
Herring	-	2	1	0	0	0	0	0	0	0	0
Capelin	0	5	0	0	-	0	0	0	0	0	0
Myctophid	7	0	3	28	37	0	4	15	1	34	1
Bathylagid	0	0	-	13	1	0	0	0	0	0	0
Pacific sand lance	-	-	-	0	-	0	0	0	0	0	0
Eulachon	0	0	0	0	-	0	0	0	0	0	0
Tanner crab	0	7	2	0	-	0	0	0	-	0	0
Cottid	3	1	7	0	-	51	0	19	-	0	0
Cyclopterid	-	-	-	0	-	1	45	0	0	0	0
Shrimp	2	-	10	0	4	23	45	32	-	0	3
Cephalopods	3	27	12	50	2	-	0	3	8	2	1
Euphausiids	5	-	-	0	43	1	2	1	55	51	50
Calanoid copepods	-	0	-	0	3	0	0	0	17	7	17

Notes: - means less than 1 percent

Source: Yang 1996; NMFS GROUNDFISH SEIS 2003

Table 3.4-1. Groundfish Socioeconomic Regions and their Acronyms

AKAPAI	Alaska Peninsula and Aleutian Islands Region. Includes the Aleutians East Borough and the Aleutians West Census Area.
AKKO	Kodiak Island Region. Includes the Kodiak Island Borough and other parts of the Kodiak archipelago.
AKSC	Southcentral Alaska Region. Includes Valdez-Cordova Census Area, Kenai Peninsula Borough, Matanuska-Susitna Borough, and Municipality of Anchorage.
AKSE	Southeast Alaska Region. Includes Yakutat Borough, Skagway-Hoonah-Angoon Borough, Haines Borough, City and Borough of Juneau, City and Borough of Sitka, Wrangell-Petersburg Census Area, Prince of Wales-Outer Ketchikan Census Area, and Ketchikan Gateway Borough.
WAIW	Washington Inland Waters Region. All counties bordering Puget Sound and the Strait of Juan de Fuca, including Clallum, Island, Jefferson, King, Kitsap, Mason, Pierce, San Juan, Skagit, Snohomish, Thurston, and Whatcom.
ORCO	Oregon Coast Region. Counties bordering the northern Oregon coast including Lincoln, Tillamook, and Clatsop.

Table 3.4-2. Selected North Pacific Groundfish Participation Measures by Region, 2001

	AKAPAI	AKKO	AKSC	AKSE	WAIW	ORCO	Total
Processor Employment and Payments to Labor							
Employment (Est. FTEs)[1]	3,525	617	150	106	3,787	0	8,184
Payments to Labor ($Millions)[2]	149.3	28.9	15.3	14.5	317.0	0.0	525.1
Groundfish Processing by Regional Inshore Plants							
Reported MT (Thousands)	674.5	79.9	6.9	6.2	NA	NA	767.5
Product MT (Thousands)	267.9	27.7	4.3	3.5	NA	NA	303.4
Utilization Rate (Percent)	39.72	34.69	62.20	55.99	NA	NA	39.53
Product Value ($Millions)	490.6	77.6	23.4	27.0	NA	NA	618.6
Value per Ton ($)	727	972	3,380	4,333	NA	NA	806
Processors Owned by Regional Residents							
No. of Processors Owned	4	7	16	10	119	0	156
Reported Tons (Thousands)	1.96	32.73	18.11	12.82	1,898.77	0.00	1,964.39
Wholesale Value ($Millions)	1.56	26.38	24.96	18.64	1,308.67	0.00	1,380.22
Catcher Vessels Owned by Regional Residents							
No. of Catcher Vessels	70	142	155	210	239	35	851
Retained Tons (Thousands)	24.4	55.7	15.0	7.1	692.4	86.5	881.2
Ex-vessel Value ($Millions)	6.4	19.3	10.8	19.1	135.6	18.2	209.4
Employment (Persons)	326.5	802	1048.5	1,742	1,238	174.5	5,332
Payments to Labor ($Millions)	2.56	7.73	4.34	7.65	54.22	7.28	83.77

Notes:

[1] Includes all employment at all shoreplants located in the region and all employment of at-sea processors (including floaters) owned by residents. In addition, the estimate includes administrative employment of all processors owned by residents.

[2] All payments to labor from at-sea processors (including floaters) are assigned to the owner's region. On-site payments to labor from shore plants are assigned to the region in which the plant is located.

Source: For processing information, NMFS Blend Data and WPR Data, September 2002 and Northern Economics internally derived tables. For harvest information, ADF&G Fish Tickets and NMFS Observer Data, September 2002. Count information does not include ghost entities, while weight information does include ghost entities to minimize instances where data cannot be reported due to NMFS confidentiality provisions. In all cases, the values for ghost vessels are negligible.

Table 3.4-3. Groundfish Harvests Delivered to Inshore Plants by Species Group, 2001

Region	Total Reported Harvest by Species									
	Thousands of Tons					Millions of $				
	ARSO	Flatfish	P Cod	Pollock	Total	ARSO	Flatfish	P Cod	Pollock	Total
AKAPAI	4.95	4.10	35.54	635.91	680.50	9.06	0.60	46.74	432.82	489.23
AKKO	12.21	16.02	22.91	39.36	90.50	12.89	5.34	26.32	29.88	74.44
AKSC	4.05	0.32	1.41	1.90	7.67	18.95	0.03	2.21	2.04	23.22
AKSE	6.82	0.30	0.10	0.00	7.22	26.63	0.00	0.08	0.00	26.72
WAIW	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ORCO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	**28.03**	**20.73**	**59.96**	**677.17**	**785.89**	**67.54**	**5.97**	**75.35**	**464.74**	**613.61**

Source: NMFS Blend Data and WPR Data, September 2002

Table 3.4-4. Groundfish Wholesale Value ($Millions) of Regionally Owned Processors by Processor Class, 2001

Processor Class	Region						
	AKAPAI	AKKO	AKSC	AKSE	WAIW	ORCO	Total
Catcher-Processors	a	23.60	5.36	10.65	631.82	0.00	671.42
Motherships	0.00	0.00	0.00	0.00	86.94	0.00	86.94
Shoreplants	1.57	2.78	19.57	7.99	589.66	0.00	621.57

Note:

[a] Due to the confidentiality of the data presented, this value has been added to shoreplants.

Source: Derived tables, Northern Economics (based on NMFS Blend Data and WPR Data, September 2002).

Table 3.4-5. Groundfish Retained Harvest by Catcher Vessels Owned by Residents of Various Regions by FMP Subarea, 2001

	AI	BS	WGOA	CGOA	EGOA	Total
Total Ex-Vessel Value ($ Millions)						
AKAPAI	0.25	0.20	5.77	0.18	0	6.41
AKKO	0.42	5.29	1.57	11.19	0.85	19.31
AKSC	0.44	1.07	1.52	7.12	0.69	10.85
AKSE	0.39	0.12	0.64	3.73	14.24	19.12
WAIW	3.53	109.56	5.20	9.95	7.32	135.55
ORCO	a	11.72	0.20	6.07	0.20	18.19
Total	5.05	127.96	14.90	38.24	23.30	209.43

Note:

[a] Due to the confidentiality of the data presented, this value has been added to BS.

Source: ADF&G Fish Tickets and NMFS Observer Data, September 2002

Table 3.4-6. Number of Boats and Retained Catch by Weight and Value by Species Group by Catcher Vessel Ownership by Region, 2001

Data	AKAPAI	AKKO	AKSC	AKSE	WAIW	ORCO
ARSO						
No. of Catcher Vessels	20	95	117	208	182	33
Retained Tons (Thousands)	0.02	3.84	1.71	5.37	5.44	2.70
Ex-vessel Value ($Millions)	0.07	5.19	5.38	22.49	19.01	1.26
Flatfish						
No. of Catcher Vessels	13	37	18	6	101	24
Retained Tons (Thousands)	0.26	3.93	1.01	0.04	2.56	2.22
Ex-vessel Value ($Millions)	0.01	0.85	0.32	0.01	0.35	0.44
Pacific Cod						
No. of Catcher Vessels	70	136	129	97	181	31
Retained Tons (Thousands)	8.41	14.13	7.41	1.61	27.19	9.53
Ex-vessel Value ($Millions)	4.21	8.74	5.12	0.60	14.12	5.29
Pollock						
No. of Catcher Vessels	26	45	60	3	111	26
Retained Tons (Thousands)	15.68	33.62	4.84	a	657.09	71.80
Ex-vessel Value ($Millions)	2.12	4.63	0.68	a	102.67	11.21
All Groundfish Species						
Total No. of Catcher Vessels	70	142	155	210	239	35
Total Retained Tons (Thousands)	24.36	55.53	14.98	7.03	692.28	86.25
Total Ex-vessel Value ($Millions)	6.41	19.40	11.51	23.10	136.15	18.20

Note:

[a] Due to the confidentiality of the data presented, this value has been added to Pacific cod.

Source: ADF&G Fish Tickets and NMFS Observer Data, September 2002. Count information does not include ghost entities, while weight information includes ghost entities to minimize instances where data cannot be reported due to NMFS confidentiality provisions. In all cases, the values for ghost vessels are negligible.

Table 3.4-7. Retained Harvests by FMP Area and Species of Regional Catcher Vessels, 2001

Region of CV Owner	FMP Area										Total
	Aleutian Islands		Bering Sea		Western Gulf		Central Gulf		Eastern Gulf		
	Pacific Cod	Pollock	Pacific Cod	Pollock	Pacific Cod	Pollock	Pacific Cod	Pollock	Pacific Cod	Pollock	
Volume (Thousands of Tons)											
AKAPAI	0.47	0.00	0.11	0.66	7.80	13.89	0.03	1.12	0.00	0.00	24.08
AKKO	0.04	0.00	3.53	23.32	1.00	0.00	9.56	10.31	a	a	47.76
AKSC	0.03	0.00	0.54	2.02	1.18	0.40	5.58	2.16	0.07	0.26	12.25
AKSE	0.11	0.00	b	b	1.16	c	0.19	c	0.16	c	1.61
WAIW	3.29	0.00	18.92	634.88	2.78	13.71	2.20	7.76	0.73	c	684.28
ORCO	0.00	0.00	3.85	61.58	a	a	5.68	9.39	0.83	c	81.33
Value ($Millions)											
AKAPAI	0.25	0.00	0.06	0.09	3.88	1.86	0.01	0.16	0.00	0.00	6.33
AKKO	0.02	0.00	1.84	3.10	0.54	0.00	6.33	1.53	a	a	13.36
AKSC	0.02	0.00	0.30	0.28	0.63	0.05	4.12	0.32	0.05	0.04	5.81
AKSE	0.02	0.00	b	b	0.34	c	0.11	c	0.12	c	0.60
WAIW	1.81	0.00	9.57	99.36	1.42	2.08	1.33	1.11	0.11	c	116.79
ORCO	0.00	0.00	1.97	9.72	a	a	3.32	1.36	0.13	c	16.50

Notes:

[a] Due to the confidentiality of the data presented, this value has been added to the same species in Central Gulf.

[b] Due to the confidentiality of the data presented, this value has been added to Pacific Cod in the Aleutian Islands.

[c] Due to the confidentiality of the data presented, this value has been added to Pacific Cod in the same area.

Source: Spreadsheet from Northern Economics based on ADF&G Fish Tickets and NMFS Observer Data, September 2002.

Table 3.4-8. Community Rankings by Alaska Groundfish Catcher Vessels Owned by Residents of the Alaska Peninsula and Aleutian Islands Region, 1992-2000

City	Total Value [a]	No. of Vessels
	Percent of Region Total	
Sand Point	59.1	49.0
King Cove	23.8	23.2
Unalaska/Dutch Harbor	14.1	21.2
False Pass	1.2	2.0
Akutan	1.1	3.3
Saint Paul Island	0.4	0.7
Adak	0.4	0.7

Note: Communities are ranked based on each community's percent of the historical total value for the region.

[a] Total value percentage for each community is based on average revenue of each catcher vessel by type and adjusted using regional-adjustment factor.

Table 3.4-9. Community Rankings by Alaska Groundfish Catcher Vessels Owned by Residents of the Kodiak Island Region, 1992-2000

	Total Value [a]	No. of Vessels
City	**Percent of Region Total**	
Kodiak	95.1	87.0
Old Harbor	2.0	5.8
Ouzinkie	1.3	3.4
Port Lions	0.8	1.9
Larsen Bay	0.8	1.9

Note: Communities are ranked based on each community's percent of the historical total value for the region.

[a] Total value percentage for each community is based on average revenue of each catcher vessel by type and adjusted using regional-adjustment factor.

Table 3.4-10. Community Rankings by Alaska Groundfish Catcher Vessels Owned by Residents of the Alaska Southcentral Region, 1992-2000

City	Total Value [a]	No. of Vessels
	Percent of Region Total	
Homer	26.2	32.0
Anchorage	19.1	13.6
Cordova	14.6	9.4
Seward	13.2	8.4
Anchor Point	5.1	7.6
Kenai	4.1	4.9
Wasilla	2.4	3.1
Seldovia	2.3	2.4
Valdez	1.7	1.8
Nikiski	1.4	1.0
Nikolaevsk	1.3	2.2
Kasilof	1.0	1.5
Fritz Creek	1.0	0.9
Palmer	0.9	1.0
Eagle River	0.8	1.3
Girdwood	0.8	1.2
Ninilchik	0.7	1.3
Soldotna	0.7	1.0
Big Lake	0.5	0.1
Halibut Cove	0.4	0.3
Willow	0.4	0.7
Whittier	0.3	1.0
Clam Gulch	0.2	0.4
Chenega Bay	0.2	0.4
Ivanof Bay	0.2	0.3
Port Graham	0.2	0.3
Tatitlek	0.2	0.3
Sterling	0.1	0.1
Nikishka	0.1	0.1
Glennallen	0.0	0.3
Chugiak	0.0	0.1
Talkeetna	0.0	0.1

Note: Communities are ranked based on each community's percent of the historical total value for the region.

[a] Total value percentage for each community is based on average revenue of each catcher vessel by type and adjusted using regional-adjustment factor.

Table 3.4-11. Community Rankings by Alaska Groundfish Catcher Vessels Owned by Residents of the Southeast Alaska Region, 1992-2000

City	Total Value [a]	No. of Vessels
	Percent of Region Total	
Sitka	29.6	28.6
Petersburg	17.4	16.1
Juneau	13.3	13.3
Ketchikan	6.7	6.9
Pelican	4.2	4.1
Craig	3.7	4.0
Hoonah	3.5	3.8
Haines	3.2	4.0
Port Alexander	2.6	1.9
Wrangell	2.6	2.7
Douglas	2.4	2.7
Auke Bay	1.6	1.8
Gustavus	1.5	1.4
Elfin Cove	1.5	1.8
Ward Cove	1.5	1.1
Yakutat	0.8	1.0
Edna Bay	0.6	0.7
Metlakatla	0.6	0.7
Hydaburg	0.5	0.7
Klawock	0.5	0.5
Tenakee	0.5	0.5
Kake	0.4	0.5
Angoon	0.2	0.3
Thorne Bay	0.2	0.3
Meyers Chuck	0.1	0.1
Kasaan	0.0	0.1
Point Baker	0.0	0.1
Hyder	0.0	0.1

Note: Communities are ranked based on each community's percent of the historical total value for the region.

[a] Total value percentage for each community is based on average revenue of each catcher vessel by type and adjusted using regional-adjustment factor.

Table 3.4-12. Average Annual Number of Vessels Participating (qualified landings) in Relevant BSAI Crab Fisheries 1991-2000 by Community (with a minimum average of two vessels)

State	City	Bristol Bay Red (BBR)	Bering Sea Opilio (BSO)	Bering Sea Tanner (BST)	BBR/BSO/ BST Combined[a]	Other 6 PMA Crab	Total All 9 PMA Crab[a]
Alaska	Kodiak	28.6	31.9	20.9	37.1	19.6	38.6
	Homer	6.2	7.8	5.0	8.3	4.8	8.3
	Anchorage	4.3	5.6	2.7	6.1	3.2	6.1
	Sand Point	2.9	3.1	2.1	3.8	2.6	4.5
	Petersburg	3.1	4.0	1.9	4.0	1.6	4.0
	Unalaska	1.4	2.1	0.9	3.0	2.4	3.4
	King Cove	2.3	2.1	1.6	3.1	1.4	3.1
	Cordova	1.5	1.8	1.3	2.0	0.8	2.0
Oregon	Newport	6.9	7.5	4.5	9.4	4.9	10.6
Washington	Seattle-Tacoma CMSA[b]	107.3	125.8	75.3	146.0	68.8	147.2
	Bellingham	1.6	2.1	1.0	2.3	0.6	2.3

Notes: Average vessel counts for combined crab categories based on 10 years. Average vessel counts for individual crab fisheries are based on the number of years from 1991 to 2000 in which each was actually open (BBR 8 years; BSO, 10 years; BST, 6 years).

[a] Totals do not equal the sum of the vessels participating in each crab fishery because many vessels participate in more than one fishery.

[b] Seattle-Tacoma Consolidated Metropolitan Statistical Area, comprising King, Pierce, and Snohomish counties.

Table 3.4-13. Average Number of Relevant BSAI Species Crab Vessels in Various Fisheries Categories, by Fisheries Category and Community of Vessel Owner – Alaska, Washington, and Oregon, 1991-2000

	Alaska					Washington		Oregon		
Fishery Category	Anchorage	Homer	King Cove/ Sand Point	Kodiak	Other Alaska	Seattle-Tacoma CMSA	Other Washington	Newport	Other Oregon	Grand Total
Bristol Bay Red King Crab	5.8	9.3	7.0	44.3	15.9	145.9	13.1	9.3	6.4	256.8
Bering Sea Opilio Crab	5.7	8.1	5.3	37.8	14.7	138.4	12.1	8.4	5.3	235.8
Bering Sea Tanner Crab	4.8	9.3	6.3	43.7	13.3	139.3	11.8	8.5	6.7	243.8
BBR/BSO/BST Crab group	6.5	9.6	7.3	45.8	18.1	162.0	14.4	10.4	6.8	280.9
Other 6 PMA Crab group	3.9	6.0	10.5	25.9	11.4	81.6	8.8	5.8	3.6	149.4
All 9 PMA Crab group	6.7	9.6	11.4	48.1	19.1	163.2	14.8	11.1	6.8	290.8
Non-qualified PMA Crab (all 9)	1.2	1.3	5.1	11.3	6.7	26.1	5.8	2.3	2.3	62.1
"Overlap" Vessels, all 9 PMA Crab	0.6	0.0	1.1	1.8	2.1	9.7	2.0	1.8	0.7	19.8
All Fisheries other than PMA Crab	3.5	8.1	8.4	34.4	10.9	80.5	7.3	7.5	4.8	165.4

Notes: PMA crab fishery and group vessel counts are not mutually exclusive and therefore do not sum to column totals, as some vessels fish several fisheries.

PMA crab fishery and group vessel counts include all landings (qualified and non-qualified).

Average vessel counts for individual fisheries are computed using years open during 1991-2000.

Average vessel counts for grouped fishery categories used all 10 years (unweighted), except for years with zero participation in all fisheries in the group for a given community.

Vessels fishing multiple fisheries have been counted only once in combined categories.

Non-qualified and “overlap” vessels do not appear in subsequent harvest or value tables due to confidentiality concerns.

“Overlap” vessels have both qualified and non-qualified PMA crab fisheries landings but are counted only once in combined groups.

“All Fisheries other than PMA Crab” represents that subset of PMA crab vessels that also fish other fisheries.

Data from vessels owned by residents of states other than Alaska, Washington, and Oregon have been deleted due to confidentiality concerns.

Source: Summarized from the Council Bering Sea Crab Data Base / 2001_1

Table 3.4-14. Average Annual Value of Harvest for Relevant BSAI Species Crab Vessels in Various Fisheries Categories, by Fisheries Category and Community of Vessel Owner – Alaska, Washington, and Oregon, 1991-2000

	Alaska					Washington		Oregon		
Data	Anchorage	Homer	King Cove/ Sand Point	Kodiak	Other Alaska	Seattle-Tacoma CMSA	Other Washington	Newport	Other Oregon	Grand Total
Bristol Bay Red King Crab	$827,311	$1,167,033	$782,112	$5,240,622	$1,589,774	$21,857,948	$1,557,482	$1,466,012	$775,679	$35,263,972
Bering Sea Opilio Crab	$2,539,097	$3,725,622	$2,705,133	$20,081,371	$6,158,292	$89,969,977	$6,426,721	$5,151,151	$2,636,270	$139,393,635
Bering Sea Tanner Crab	$216,299	$615,159	$429,111	$3,593,507	$685,572	$13,163,108	$765,462	$740,503	$512,954	$20,721,675
BBR/BSO/BST Crab group	$3,582,707	$5,507,813	$3,916,357	$28,915,500	$8,433,638	$124,991,034	$8,749,665	$7,357,666	$3,924,903	$195,379,282
Other 6 PMA Crab group	$730,890	$302,773	$537,166	$5,390,614	$761,770	$16,168,524	$831,041	$3,798,493	$205,249	$28,726,520
All 9 PMA Crab group	$4,313,597	$5,810,586	$4,453,523	$34,306,113	$9,195,408	$141,159,558	$9,580,705	$11,156,159	$4,130,153	$224,105,802
All fisheries other than PMA Crab	$260,445	$742,913	$2,064,507	$8,711,223	$2,030,719	$31,632,523	$1,032,300	$4,529,452	$1,581,269	$52,585,352
Total All Fisheries	$4,574,041	$6,553,499	$6,518,030	$43,017,337	$11,226,127	$172,792,081	$10,613,005	$15,685,611	$5,711,421	$276,691,153
BSAI crab fisheries as percent of total	94	89	68	80	82	82	90	71	72	81

Notes: "Fisheries other than PMA crab" includes both Alaska EEZ (federal) and Alaska state waters fisheries.

PMA crab fishery and group harvest values include all landings (qualified and non-qualified).

Average annual community harvest values are computed using 1991-2000 data (that is, including years various fisheries were closed).

"All Fisheries other than PMA Crab" represents the value of non-PMA crab harvests by PMA crab vessels (that is, the other fisheries in which they participate).

"Other States" have been deleted due to confidentiality concerns.

Source: Summarized from the Council Bering Sea Crab Data Base / 2001_1

Table 3.4-15. Annual Average Number of Qualified Catcher Processors by Relevant BSAI Crab Fishery and Location of Owner of Vessel, 1991-2000

	Alaska		Washington	Oregon	
Data	Anchorage	Kodiak	Seattle-Tacoma CMSA	Newport	Grand Total
Bering Sea Opilio	0.1	1.1	8.6	0.0	9.9
Bering Sea Tanner	0.0	0.7	6.7	0.0	7.3
Bristol Bay Red	0.0	0.9	6.0	0.0	6.9
St. Matthew Blue	0.0	0.5	1.4	0.0	1.9
Adak Brown	0.0	1.0	0.2	0.0	1.2
Adak Red	0.0	0.8	0.3	0.0	1.2
Dutch Harbor Brown	0.0	0.1	0.0	0.0	0.1
Pribilof Blue	0.0	0.0	0.3	0.0	0.3
Pribilof Red	0.0	0.0	0.3	0.0	0.3

Notes: Includes all Catcher Processors, locations with zero excluded.

Annual averages based on the participation in open years for each fishery.

Over the 1991-2000 span, a total number of unique qualified catcher processors from each community for any and all years were Anchorage, 1; Kodiak, 2; Seattle-Tacoma CMSA, 8; Newport, 0 (Grand Total, 11).

Non-qualified were: Anchorage, 0; Kodiak, 0; Seattle-Tacoma CMSA, 25; Newport, 2 (Grand Total, 27).

Geographical ownership of some vessels changed over time, accounting for Anchorage and S-T CMSA opilio numbers.

Source: Summarized from the Council Bering Sea Crab Data Base / 2001_1

Table 3.4-16. Average Annual Number of Processors in Relevant BSAI Crab Fisheries 1991-2000 by Community (with a minimum average of 0.5 processors)

Designation Status	City	Bristol Bay Red (BBR)	Bering Sea Opilio (BSO)	Bering Sea Tanner (BST)	BBR/BSO/ BST Combined	Other 6 PMA Crab	Total All 9 PMA Crab
Operating Area Designated	Unalaska/ Dutch Harbor	7.1	9.1	8.5	9.7	5.7	9.9
	St. Paul	0.9	5.9	2.0	5.9	2.4	5.9
	Kodiak	3.4	3.0	6.2	5.3	1.2	5.4
	St. Matthews	0.0	0.3	0.0	0.3	1.9	2.2
	King Cove	1.0	1.5	1.3	1.7	0.8	1.7
	Anchorage	0.5	0.7	1.0	1.2	0.6	1.3
	Port Moller	1.1	0.0	1.5	1.2	0.0	1.2
	Akutan	1.0	1.0	1.2	1.1	0.8	1.1
	St. George	0.0	1.0	0.2	1.1	0.0	1.1
Operating Area Not Designated	Catcher Processors	10.8	16.0	15.7	16.6	5.9	17.5
	Undesignated Floaters	3.4	5.1	7.0	8.3	2.3	9.0

Notes: Multiple facilities operating in the same location for the same processor were counted only once (most commonly multiple floaters).

Facilities of the same company operating in different communities were counted in each such community.

Floaters were counted once for each community in which they operated in any given year.

Floaters assignable to specific locations were so assigned – others are shown as "undesignated."

Catcher processors by definition have no specific processing location.

Averages for individual fisheries were calculated using only those years each fishery was open from 1991 to 2000.

Totals do not equal the sum of processors participating in each species category because processors handle more than one species.

Source: Summarized from the Council Bering Sea Crab Data Base/2001_1

Table 3.4-17. Annual Average Number of Processors, 1991-2000, by City/Port Category and BSAI Crab Fishery

	Processing Activity with Area Designation					Processing Activity without Area Designation		
	South Region				North Region			
Species	Kodiak	Unalaska/ Dutch Harbor	Other South	Total South		Catcher Processors	Undesignated Floaters	Grand Total
Adak Brown	0.0*	4.2	0.8*	5.0*	0.0*	2.5*	0.4*	7.9
Adak Red	0.5*	3.5*	1.3*	5.3*	0.2*	1.7*	0.5*	7.7
Bristol Bay Red	3.4*	7.1	4.3*	14.8	0.9*	10.8	3.4*	29.8
Bering Sea Opilio	3.0*	9.1	4.5*	16.6	6.6	16.0	5.1	44.3
Bering Sea Tanner	6.2	8.5	5.3	20.0	2.0*	15.7	7.0*	44.7
Dutch Harbor Brown	0.0*	4.7	0.6*	5.3*	0.0*	1.6*	0.4*	7.3
Pribilof Blue	1.0*	3.8*	2.5*	7.3*	4.0*	0.3*	1.0*	12.5
Pribilof Red	1.3*	4.5	2.5*	8.3*	3.5*	0.3*	1.2*	13.3
St. Matthew Blue	0.3*	4.0	1.0*	5.3*	3.6*	4.0	1.8*	14.6

Notes: Catcher processor data do not have area designations.

"Undesignated Floaters" are mobile processors Appendix F - Council Review

Preliminary Draft EFH/EIS - 8-30-03 that could not be assigned city or port locations.

"Other South" includes all southern locations except Kodiak and Unalaska.

"North Region" includes St. George, St. Matthew, and St. Paul.

Averages are computed using years that each fishery was actually open from 1991 to 2000.

Cells with values marked * are suppressed in subsequent volume and/or value tables due to confidentiality.

Source: Summarized from the Council Bering Sea Crab Data Base / 2001_1

Table 3.4-18. Annual Average of Value in Dollars of Crab Processed, 1991-2000, by City/Port Category and BSAI Crab Fishery

	Processing Activity with Area Designation					Processing Activity without Area Designation		
	South Region				North Region			
Species	Kodiak	Unalaska/ Dutch Harbor	Other South	Total South		Catcher Processors	Undesignated Floaters	Grand Total
Adak Brown	*	$2,648,595	*	*	*	*	*	$6,837,538
Adak Red	*	*	*	*	*	*	*	$1,349,400
Bristol Bay Red	*	$15,069,715	*	$28,088,680	*	$3,191,166	*	$35,781,442
Bering Sea Opilio	*	$40,233,123	*	$54,415,414	$44,504,637	$19,174,922	$23,619,793	$141,714,765
Bering Sea Tanner	$1,170,659	$7,589,340	$5,279,072	$14,039,070	*	$2,778,785	*	$20,922,829
Dutch Harbor Brown	*	$8,902,323	*	*	*	*	*	$10,215,680
Pribilof Blue	*	*	*	*	*	*	*	$747,600
Pribilof Red	*	$764,114	*	*	*	*	*	$2,690,481
St. Matthew Blue	*	$1,205,264	*	*	*	$638,736	*	$7,070,174
Grand Total	$3,542,039	$76,942,759	$31,857,603	$112,342,401	$51,582,835	$30,541,540	$32,863,133	$227,329,909

Notes: Catcher processor data do not have area designations.

"Undesignated Floaters" are mobile processors that could not be assigned city or port locations.

"Other South" includes all southern locations except Kodiak and Unalaska.

"North Region" includes St. George, St. Matthew, and St. Paul.

Annual avg. obtained by decade total ÷ by 10 (i.e., for all years, not just open years) to provide for comparability across all fisheries and all years for the communities and regions.

* = cells must be suppressed due to confidentiality due to individual or a combination of cell characteristics.

Source: Summarized from the Council Bering Sea Crab Data Base / 2001_1

Table 3.4-19. Vessels, Landings, and Price in the Alaska Weathervane Scallop Fishery, 1980-1995

Year	Number of Vessels	Landings (pounds)	Price ($/lb)
1980	8	633,000	$4.32
1981	18	924,000	$4.05
1982	13	914,000	$3.77
1983	6	194,000	$4.88
1984	10	390,000	$4.47
1985	8	648,000	$3.12
1986	9	683,000	$3.66
1987	4	583,000	$3.38
1988	4	341,000	$3.49
1989	7	526,000	$3.68
1990	9	1,489,000	$3.37
1991	7	1,191,000	$3.76
1992	7	1,811,000	$3.88
1993	15	1,429,000	$5.00
1994	16	1,235,000	$6.00
1995	10	283,000	n/a

Source: Witherell 1996

Table 3.4-20. Scallop Vessels, Home Ports, Areas Fished 1996-1998, Number of Years Fished 1980-1998, and LLP Qualification Status

Vessel Name	LOA[1]	Home Port City	Areas Fished in 1996-98	# of Years Fished 1980-98	LLP[2] Qualified
Kilkenny	75	Juneau, AK	Cook Inlet	4	yes
Northern Explorer	70	Homer, AK	Cook Inlet/ Statewide	6	yes
Wayward Wind[3]	52	Eagle River, AK	Cook Inlet	4+ (see note 3)	yes
Alaska Beauty	98	Cordova, AK	Cook Inlet	3	no
Provider	124	Kodiak, AK	Statewide	10	yes
Pursuit	101	Atlantic City, NJ	Statewide	19	yes
Ocean Hunter	100	Seattle, WA	Statewide	10	yes
Forum Star	97	Juneau, AK	Statewide	5	yes
Carolina Boy	96	Norfolk, VA	Statewide	6	yes
Carolina Girl 2	96	Norfolk, VA	Statewide	6	yes
Jacqueline& Joseph[4]	96	Philadelphia, PA	Statewide	9	no
Arctic Rose[4]	224	Seattle, WA	none	2	no
Mr. Big	146	Norfolk, VA	none	4	no
Phoenix	104	Boston, MA	none	6	no
Trade Wind	88	Boston, MA	none	4	no
Lorraine Carol	88	Seattle, WA	none	3	no
Fortune Hunter	82	Seattle, WA	none	3	no
Rush	72	Boston, MA	none	7	no

Notes:

[1] LOA (length overall in feet) from moratorium permit or other sources.

[2] LLP (license limitation program).

[3] Wayward Wind qualified for moratorium with 4 years' landings (1983, 84, 85, 87); the permit holder fished the F/V LaBrisa in 1994 and fished the permit on leased vessels (Billy D and Trina) in 1996 and 1997.

[4] Jacqueline & Joseph renamed Arctic Queen; Arctic Rose renamed Seawind.

Source: Adapted from NMFS, n.d.

Table 3.4-21. 2002 IFQ Halibut Allocations and Landings

Species/Area	Vessel Landings	Area IFQ TAC	Total Harvest	Percent Harvested
Halibut 2C	2,759	8,500,000	8,435,377	99%
Halibut 3A	2,546	22,630,000	22,560,168	100%
Halibut 3B	966	17,130,000	17,119,777	100%
Halibut 4A	379	4,970,000	4,951,724	100%
Halibut 4B	176	3,344,000	3,213,189	96%
Halibut 4C	100	1,015,000	484,815	48%
Halibut 4D	45	1,421,000	1,360,253	96%
Total	**6,971**	**59,010,000**	**58,125,303**	**99%**

Notes:

[1] Vessel landings include the number of reported landings by participating vessels reported by IFQ regulatory area; each such landing may include harvests from multiple IFQ permit holders.

[2] Halibut weights are reported in net (headed and gutted) pounds.

Source: NMFS RAM IFQ Personal Communication (IFQ Report to the Fleet in Draft) 2003.

Table 3.4-22. Top Ten Alaska Halibut Port Landings for 2002 and Port Rankings, 1995-2002

Port	2002 Rank	2002 Pounds (net wt.)	Percent of 2002 Landings	1995 Rank	1996 Rank	1997 Rank	1998 Rank	1999 Rank	2000 Rank	2001 Rank
Homer	1	13,633,196	23.5%	2	2	3	1	1	1	1
Kodiak	2	7,891,904	13.6%	1	1	1	2	2	2	2
Seward	3	7,558,291	13.0%	5	3	4	3	3	4	4
Unalaska/Dutch	4	5,713,551	9.8%	4	4	2	4	4	3	3
Sand Point	5	3,073,679	5.3%	15	15	13	13	14	10	11
Juneau	6	2,786,812	4.8%	13	8	8	7	5	5	6
Sitka	7	2,252,447	3.9%	3	5	5	5	6	6	5
Petersburg	8	2,193,484	3.8%	6	6	6	6	7	7	7
Adak	9	2,139,912	3.7%	none	none	none	none	12	8	8
Cordova	10	1,357,441	2.3%	8	9	9	9	8	11	10
All “Outside”	N/A	2,146,934	3.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Ports	**N/A**	**58,125,303**	**100.0%**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Note: “All Ports” includes some additional Alaska ports.

Source: NMFS RAM IFQ Personal Communication (IFQ Report to the Fleet in Draft) 2003

Table 3.4-23. Changes in Halibut Quota Share (QS) Holdings between Initial Issuance and Currently Issued (as of December 31, 2002)

	Initially Issued				Currently Issued (as of December 31, 2002)			
	Alaskan		Non-Alaskan		Alaskan		Non-Alaskan	
Area	# of Persons	QS Units	# of Persons	QS Units	# of Persons	QS Units	# of Persons	QS Units
2C	1,971	49,265,458	417	10,293,932	1,252	50,601,315	244	9,007,025
3A	2,436	118,591,502	636	66,843,449	1,563	113,184,418	420	71,634,627
3B	780	28,061,266	277	26,159,470	394	26,281,530	176	27,621,521
4A	376	7,065,931	155	7,485,405	184	6,604,557	101	7,898,992
4B	80	3,242,733	73	6,050,658	50	2,892,809	58	6,391,965
4C	48	2,199,603	32	1,769,583	37	1,911,420	23	2,050,000
4D	22	665,856	46	4,168,808	13	1,222,138	35	3,647,138
4E	98	127,392	6	12,607	96	126,642	7	13,129
Total	**3,976**		**854**		**2,841**		**659**	

Notes:

"Initially Issued" means QS that is initially issued to its first holder. Initial issuance was accomplished primarily at the beginning of the IFQ program but continued to occur as a result of adjudicated appeals.

Designation of "Alaskan" or "Non-Alaskan" is premised on holder's self-reported business mailing address; NMFS/RAM makes no effort to verify residency.

Changes over time between "Alaskan" and "Non-Alaskan" QS holdings are the result both of QS transfers and of QS holder's address changes.

Total QS units for a species/area may differ from published QS pool sizes as a result of QS units not assigned to any person (for example, units in reserve or revoked mid-year).

The number of QS holders is not additive across areas or species. "Unique Total" represents the unique number of QS holders for each species.

Additional information on changes in QS holdings and consolidation in the halibut fishery (and the sablefish fishery) can be found on the web site www.fakr.noaa.gov.

Persons without addresses are excluded.

Source: NMFS RAM IFQ Personal Communication (IFQ Report to the Fleet in Draft) 2003

Table 3.4-24. Quota Held by "IFQ Crewmembers" by Species, Area, and Residence Category at Year-End 2002

Species/Area	"Alaskan" IFQ Pounds	"Non-Alaskan" IFQ Pounds	Total 2002 IFQ Pounds	Percent of Area TAC
Halibut 2C	1,693,049	419,987	2,113,037	25%
Halibut 3A	2,973,333	1,369,887	4,343,220	19%
Halibut 3B	2,019,096	1,271,245	3,290,341	19%
Halibut 4A	656,639	609,977	1,266,617	26%
Halibut 4B	255,690	643,096	898,786	27%
Halibut 4C	153,066	82,132	235,198	23%
Halibut 4D	55,682	245,058	300,739	21%
Halibut Total	**7,806,555**	**4,641,382**	**12,447,938**	**21%**

Notes: An "IFQ Crewmember" is an individual who did not receive QS/IFQ by initial issuance, but who applied for, and was issued, a TEC and subsequently received QS by transfer.

The designation of "Alaskan" and "Non-Alaskan" is premised upon the address provided by the most recent address provided by the applicants. RAM makes no attempt to determine, or to verify, a person's state of legal residence.

Pounds are derived from QS held and are not adjusted.

Persons without addresses are excluded.

Source: NMFS RAM IFQ Personal Communication (IFQ Report to the Fleet in Draft) 2003

Table 3.4-25. Vessels Participating in IFQ Halibut Fishery; All Vessels Landing Halibut, by Area, 1992-2002 Seasons

Species/Area	Before IFQ Program			Last Eight IFQ Seasons							
Halibut	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
2C	1,775	1,562	1,461	1,105	1,029	993	836	840	816	733	713
3A	1,924	1,529	1,712	1,145	1,104	1,076	899	892	839	802	746
3B	478	401	320	332	350	357	325	323	340	327	315
4A	190	165	176	140	147	142	120	121	125	118	119
4B	82	65	74	57	64	69	47	51	55	52	52
4C	62	58	64	35	41	46	30	36	35	28	24
4D	26	19	39	27	33	33	22	29	32	31	32
All Unique	**3,452**	**3,393**	**3,450**	**2,057**	**1,962**	**1,925**	**1,601**	**1,613**	**1,568**	**1,451**	**1,385**

Source: NMFS RAM IFQ Personal Communication (IFQ Report to the Fleet in Draft) 2003

Table 3.4-26. State and Federally Managed Groundfish Harvest in the GOA in 2000

State Fishery	State Managed Harvest	Federally Managed Harvest	State Harvest as a Percentage of Total Harvest
Pollock[a]	1,193 mt	71,877 mt	1.6
Pacific cod[b]	12,265 mt	54,493 mt	18.4
Sablefish[c]	408 mt	15,408 mt	2.6
Rockfish[d]	304 mt	28,182 mt[e]	1.1

Notes:

[a] Estimates of pollock biomass in PWS are included in the assessment of the WYK/C/W GOA pollock stock and the recommended ABC for WYK/C/W GOA pollock fishery is reduced by the amount of the GHL established for PWS(Council 2000b).

[b] Pacific cod guideline harvest levels (GHL) are set up to 25% of the federal TAC for GOA only.

[c] Includes both the BSAI and GOA.

[d] Includes rockfish of the genus *Sebastes*.

[e] Includes Pacific ocean perch, other rockfish, other red rockfish, sharpchin, northern, rougheye, shortraker, pelagic shelf rockfish and demersal shelf rockfish.

Source: NMFS 2001a

Table 3.4-27. 2001 State-managed Fisheries Commercial Groundfish Harvest

	Species	Tonnage	Ex-vessel Value
Southeast			
	Sablefish	1,470	$9,241,219
	Pacific Cod	161	$87,017
	Other Groundfish	380	$445,968
Central Region			
	Sablefish	229	$911,587
	Pacific Cod	448	$338,989
	Other Groundfish	1,693	$318,090
Westward Region			
	Sablefish	230	$908,358
	Pacific Cod	10,460	$5,339,901
	Other Groundfish	464	$284,707
Alaska Totals			
	Sablefish	1,929	$11,061,164
	Pacific Cod	11,069	$5,765,907
	Other Groundfish	2,537	$1,048,765
	Total:		$17,875,836

Source: ADF&G 2002c

Table 3.4-28. Dungeness Crab Harvest in Alaska

Year	Tonnage	Ex-vessel Value (millions)
1995	2,705	$9.38
1996	3,005	$5.91
1997	1,865	$6.53
1998	1,390	$5.26
1999	2,265	$7.66
2000	1,250	$4.26

Source: ADF&G 2002d

Table 3.4-29. Korean Hair Crab Harvests

Year	Tonnage	Ex-vessel Value (millions)
1995	950	5.23
1996	375	1.59
1997	375	1.59
1998	160	1.01
1999	110	0.72
2000	confidential	

Source: ADF&G 2002d

Table 3.4-30. Status of Alaska Herring Fisheries in 1999

							Harvest Policy			1999 Fishery	
			Assessment	Biomass [3]	Stock Status		Exploitation Rate		Threshold		Catch
Fishery Area	Season	Gear [1]	Method [2]	(mt)	Level	Trend	Framework	1999	(mt)	Duration	(mt)
Southeastern											
Kah Shakes/Cat I.	Sac Roe	Gn	ASA	7,370	Moderate	Stable	0-20%	0%	5,443	-	0
Sitka Sound	Sac Roe	PS	ASA	39,553	High	Stable	0-20%	19%	18,144	1.3 hrs	7,711
Seymour Canal	Sac Roe	Gn	ASA	4,706	Moderate	Stable	0-20%	11%	2,722	11 hrs.	649
Hobart/Houghton	Food/Bait	PS,Gn	ASA	3,417	Moderate	Stable	0-20%	12%	1,814	2 hrs.	499
Craig, Tenakee	Food/Bait, Pd	PS, Pd	ASA	8,165	Moderate	Stable	0-20%	10%	7,257	5 days	1,238
Hoonah Sound	Spawn on Kelp	Pd	ASA	2,722	Moderate	Stable	0-20%	10%	1,814	20 days	115
Prince William Sound		PS,Gn,Pd,Hp	ASA	35,886	Low	Increasing	0-20%	15%	19,958	-	0
Cook Inlet (Kamishak)	Sac Roe	PS	ASA	5,443-11,79	Low	Stable	0-20%	0%	7,257	-	0
Kodiak	Sac Roe/Fd. Bait	PS,Gn,Tr	Catch, age comp.	Uncertain	Moderate	Stable	0-20%			30 days	1,488
Alaska Peninsula	Food/Bait	PS	*(Harvest policy specified as 7% allocation of Bristol Bay allowable catch)*							13 hrs.	2,175
Bristol Bay (Togiak)	Sac Roe	PS,Gn,Hp	ASA	81,647	Moderate	Declining	20% max.	20%	31,752	32 hrs.	17,190
Kuskokwim Area											
Security Cove	Sac Roe	Gn	Annual Survey	2,776	Moderate	Declining	20% max.	20%	1,089	9 hrs.	973
Goodnews Bay	Sac Roe	Gn	Annual Survey	2,730	Moderate	Declining	20% max.	20%	1,089	49 hrs.	1,239
Cape Avinof	Sac Roe	Gn	Annual Survey	3,225	High	Stable	15% max.	15%	454	51 hrs.	484
Nelson Island	Sac Roe	Gn	Annual Survey	5,285	High	Declining	20% max.	17%	2,722	22 hrs.	1,239
Nunivak Island	Sac Roe	Gn	Annual Survey	3,011	Moderate	Declining	20% max.	20%	1,361	-	0
Cape Romanzof	Sac Roe	Gn	Annual Survey	Uncertain	Moderate	Declining	20% max.	20%	1,361	13.5 hrs.	485
Norton Sound	Sac Roe	Gn, BS, Pd	Annual Survey	37,348	High	Stable	20% max.	20%	6,350	101 hrs.	2,357

[1] Gears: Gillnet (Gn), purse seine (PS), pound spawn-on-kelp (Pd), hand-picked spawn-on-kelp (Hp), beach seine (BS), trawl (Tr).

[2] Assessment methods: Age-structured assessment models (ASA), synthesize several sources of abundance information.

[3] Run biomass is defined as the proportion of the population which will return to spawn.

Table 3.4-31. Alaska Sac Roe Herring Catch 2000-2002

	2000		2001		2002	
Fishery	**Harvest (tons)**	**Ex-vessel Value**	**Harvest (tons)**	**Ex-vessel Value**	**Harvest (tons)**	**Ex-vessel Value**
Southeast	5,278	n/a	12,654	$5,886,000	10,988	$3,351,340
Prince William Sound	below threshold	$0	below threshold	$0	below threshold	$0
Cook Inlet	below threshold	$0	n/a	$8,824	18	$23,530
Kodiak	1,325	n/a	1,720	$847,000	n/a	$754,200
Alaska Peninsula	n/a	n/a	n/a	n/a	below threshold	$0
Bristol Bay (Togiak)	19,930	n/a	20,892	$2,619,800	17,095	$2,512,965
Kuskokwim	1,523	$292,000	1,978	$205,000	1,327	$132,700
Cape Romanzof	496	n/a	138	$9,700	100	n/a
Norton Sound	3,921	n/a	2,223	$347,523	1,017	n/a
Port Clarence	no fishing	$0	no fishing	$0	no fishing	$0
Totals:	32,473	$292,000	39,605	$9,923,847	30,545	$6,774,735

Source: ADF&G 2000a; 2001; 2002b

Table 3.4-32. Bering Sea Herring Sac Roe Harvest 1980-1998

Harvest in Tons by Fishery				
Year	**Togiak**	**Kuskokwim***	**Cape Romanzof**	**Norton Sound**
1980	19,596	1,145	611	2,452
1981	12,542	1,830	720	4,371
1982	21,489	1,299	657	3,933
1983	26,996	1,508	816	4,582
1984	19,300	1,052	1,185	3,662
1985	25,616	2,792	1,299	3,548
1986	16,620	2,705	1,865	5,194
1987	15,204	1,971	1,342	4,082
1988	14,383	1,930	1,119	4,672
1989	12,258	1,093	926	4,771
1990	14,832	739	329	6,439
1991	15,011	589	526	5,672
1992	25,808	1,464	530	No Fishery
1993	17,700	1,908	371	5,079
1994	30,177	2,220	456	906
1995	27,778	3,947	541	6,763
1996	24,063	5,014	752	6,220
1997	23,814	3,648	879	3,971
1998	22,775	3,751	727	2,624
1999	n/a	n/a	n/a	n/a
2000	19,930	1,523	496	3,921
2001	20,892	1,978	138	2,223
2002	17,095	1,327	100	1,017

* Catch data for Kuskokwim includes Nelson Island and Nunivak Island data after 1985; includes Cape Avinof data after 1988.

Source: ADF&G, 1998c; **2000_;** 2001; 2002b

Table 3.4-33. Commercial Salmon Harvest, 1970-1989

Year	Total Salmon Number	Total Salmon Weight (lbs)	Total Ex-vessel Value
1970	68,363,000	347,232,000	n/a
1971	47,500,000	258,299,000	n/a
1972	31,955,000	171,745,000	n/a
1973	22,186,000	144,379,000	n/a
1974	21,763,000	134,934,000	n/a
1975	26,237,000	139,765,000	n/a
1976	44,421,000	245,868,000	n/a
1977	50,847,000	307,449,000	n/a
1978	82,326,000	389,639,000	n/a
1979	88,342,000	439,162,000	n/a
1980	109,992,000	511,373,000	n/a
1981	113,289,000	612,048,000	n/a
1982	111,724,000	561,707,000	n/a
1983	127,920,000	621,317,000	n/a
1984	133,961,000	661,081,000	n/a
1985	146,358,000	669,735,000	n/a
1986	128,947,000	609,282,000	n/a
1987	96,624,000	508,604,000	n/a
1988	100,563,000	534,480,000	n/a
1989	154,126,000	698,260,000	n/a

Table 3.4-34. Commercial Salmon Harvest, 1990-2002

	Number of Salmon					
Year	**Chinook**	**Sockeye**	**Coho**	**Pink**	**Chum**	**Total**
1990	666,000	52,693,000	5,478,000	88,208,000	8,010,000	**155,055,000**
1991	613,000	44,646,000	6,153,000	128,336,000	9,769,000	**189,517,000**
1992	606,000	58,283,000	7,095,000	60,597,000	10,223,000	**136,804,000**
1993	667,000	64,314,000	6,050,000	109,631,000	12,238,000	**192,900,000**
1994	640,000	52,816,000	9,551,000	116,720,000	16,135,000	**195,862,000**
1995	663,000	63,532,000	6,471,000	128,333,000	18,796,000	**217,795,000**
1996	500,000	49,860,000	5,870,000	97,900,000	21,240,000	**175,370,000**
1997	660,000	31,090,000	3,190,000	71,960,000	16,240,000	**123,140,000**
1998	580,000	22,720,000	4,680,000	104,770,000	19,070,000	**151,820,000**
1999	430,000	45,120,000	4,590,000	145,990,000	20,480,000	**216,610,000**
2000	360,000	33,500,000	4,200,000	74,800,000	24,290,000	**137,150,000**
2001	370,000	26,520,000	4,950,000	127,620,000	15,400,000	**174,860,000**
2002	539,000	22,487,000	4,771,000	87,561,000	15,023,000	**130,381,000**

	Weight (lbs) of Salmon					
Year	**Chinook**	**Sockeye**	**Coho**	**Pink**	**Chum**	**Total**
1990	11,481,000	305,521,000	40,019,000	271,866,000	62,722,000	**691,609,000**
1991	10,740,000	255,646,000	43,879,000	349,300,000	69,685,000	**729,250,000**
1992	10,768,000	343,260,000	53,798,000	203,693,000	76,155,000	**687,674,000**
1993	11,299,000	378,577,000	38,439,000	334,729,000	82,984,000	**846,028,000**
1994	11,552,000	294,389,000	75,284,000	364,844,000	120,103,000	**866,172,000**
1995	9,350,000	310,450,000	46,420,000	325,160,000	216,400,000	**907,780,000**
1996	9,350,000	310,450,000	46,420,000	325,160,000	216,400,000	**907,780,000**
1997	11,890,000	188,560,000	23,550,000	265,470,000	140,940,000	**630,410,000**
1998	10,170,000	127,950,000	36,840,000	373,740,000	164,100,000	**712,800,000**
1999	7,340,000	247,410,000	28,450,000	431,600,000	183,800,000	**898,600,000**
2000	6,000,000	206,350,000	31,860,000	251,000,000	215,760,000	**710,970,000**
2001	6,410,000	171,040,000	35,000,000	57,870,000	45,050,000	**315,370,000**
2002	8,960,000	136,495,000	36,853,000	298,741,000	127,388,000	**608,437,000**

	Ex-vessel Value of Salmon					
Year	**Chinook**	**Sockeye**	**Coho**	**Pink**	**Chum**	**Total**
1990	n/a	n/a	n/a	n/a	n/a	**n/a**
1991	n/a	n/a	n/a	n/a	n/a	**n/a**
1992	n/a	n/a	n/a	n/a	n/a	**n/a**
1993	n/a	n/a	n/a	n/a	n/a	**n/a**
1994	$16,030,000	$305,750,000	$66,540,000	$68,970,000	$31,840,000	**$489,130,000**
1995	$18,890,000	$308,750,000	$29,550,000	$81,620,000	$47,070,000	**$485,880,000**
1996	$13,350,000	$263,520,000	$19,200,000	$31,620,000	$3,734,000	**$331,424,000**
1997	$18,290,000	$185,340,000	$18,580,000	$39,420,000	$34,980,000	**$296,610,000**
1998	$11,900,000	$149,330,000	$20,160,000	$50,980,000	$30,350,000	**$262,720,000**
1999	$16,670,000	$247,020,000	$2,404,000	$60,430,000	$35,160,000	**$361,684,000**
2000	$10,010,000	$156,750,000	$17,160,000	$33,980,000	$57,220,000	**$275,120,000**
2001	$12,050,000	$97,870,000	$17,380,000	$57,870,000	$45,050,000	**$230,220,000**
2002	$11,008,000	$75,825,000	$13,664,000	$20,046,000	$20,042,000	**$140,585,000**

Table 3.4-35. Comparison of Gear, Fishing Intensity, and Habitat Features for Studies of the Effects of Bottom Trawl on Benthic Habitat

Study	Relevance Rank	Substrate	Footrope (cm diam.)	Depth (m)	Lat (deg)	Region	Intensity (# of passes/yr)	Recovery (yr)
McConnaughey et al. 2000	0	sand	40	44 - 52	58	Alaska	see text	4
Freese et al., 1999, 2002	0	pebble,cobble	60	206-274	58	Alaska	1	1
Schwinghamer et al. 1996, 1998	0	fine-med sand	46	120-146	48	NW Atlantic	12	1
Prena et al. 1999	0	fine-med sand	46	120-146	48	NW Atlantic	12	
Kenchington et al. 2001	0	fine-med sand	46	120-146	48	NW Atlantic	12	1
Gilkinson et al. 1998	0	fine-med sand	doors	lab	48	NW Atlantic	1	
Brown Thesis 2003	0	sand	> 30	30	58	Alaska	0.5	
Brylinsky et al. 1994	1	silt over sand	29	5-10	45	NW Atlantic	1	0.3
Van Dolah et al. 1987	1	hard bottom	30	20	32	SE USA	1	1
Bergman and Santbrink 2000	1	sand & silt	20	45	55	North Sea	1	
Rose 1999	1	sand	42	68	56	Alaska	1	
Rumohr and Krost 1991	1	?	small doors	20	58	Baltic	1	
Moran and Stephenson 2000	2	? with epifauna	20	50-55	20	NW Australia	4	
Sainsbury et al 1997	2	? with epifauna	15	?	20	NW Australia	1	
Engel and Kvitek 1998	2	grvl.,sand, silt	?	180	36	West USA	4	
Wassenberg et al. 2002	2	coarse sand	8	25-358	20	NW Australia	1	
Sparks-McConkey & Watling 2001	2	silt/clay	1.8 (10?)	60	44	NW Atlantic	4	0.25, .5
Smith et al. 2000	2	silt/clay	?	200	35	Mediterranean	?	0.2
Sanchez et al. 2000	2	silt/clay	?	30-40	41	Mediterranean	1, 2	
Mayer et al. 1991	2	silt/clay	2	20	45	NW Atlantic	1	
Frid et al 1999, 2000	2	silt/clay	2	80	55	North Sea	?	
Ball et al. 2000	2	silt/clay	2	30-40	53	Irish Sea	2, 7.5	
Tuck et al. 1998	2	silt/clay	?	32	56	Scotland	18	1.5
Drabsch et al. 2001	2	sand(2) silt (1)	?	20	35	S. Australia	2	
Lindegarth et al. 2000	2	?	2	75-90	58	Sweden	18	
Gibbs et al. 1980	2	sand	0.8	?	35	SE Australia	?	
Thrush et al. 1998	2	?	14.5	13-35	36	New Zealand	1 trawl & 5 seine	
Bradstock and Gordon 1983	2	bryozoan reefs	?	10-35	41	New Zealand	?	
Probert et al. 1997	2	seamounts	?	662-1524	44	New Zealand	?	
Koslow and Garrett-Holmes 1995	2	seamounts	?	700-2000	44	S. Australia	?	
Recent Studies (Field work completed)								
Stone et al. A	0	fine sand	> 30	105 - 157	57	Alaska		
Stone et al. B	0	fine sand	42	142	57	Alaska	1, 6	
McConnaughey et al.	0	fine sand	36	49	57	Alaska	4	

Table 3.4-36. Summary of Non-fishing Threats to Essential Fish Habitat in Alaska [1]

	CHANGES														
	PHYSICAL			CHEMICAL						BIOLOGICAL					
	SUBSTRATE	STRUCTURE	WATER FLOW DYNAMICS	NUTRIENT INPUT/LOSS	HYDROCARBON INPUT	PESTICIDE INPUT	WATER QUALITY	ORGANIC WASTE	INDUSTRIAL POLLUTANTS	ORGANISM MORTALITY	PHYSICAL DAMAGE TO ORGANISMS	REDUCED CARRYING CAPACITY	INTRODUCTION OF EXOTIC SPECIES	SPECIES COMPLEX SHIFT
UPLAND ACTIVITIES															
Non-point Source Pollution															
Agricultural/Nursery Runoff	X			X		X	X	X		X	X	X			
Silviculture/Timber Harvest	X	X	X	X			X					X		X	
Pesticide Application						X				X	X				
Urban/Suburban Development	X	X	X	X	X	X	X	X				X	X	X	
Road Building and Maintenance	X	X	X	X	X	X	X			X	X	X			
RIVERINE ACTIVITIES															
Mining															
Mineral Mining	X			X			X			X	X	X		X	
Sand and Gravel Mining	X	X					X			X	X				
Debris Removal															
Organic Debris							X	X		X	X				
Inorganic Debris							X								
Dam Operation	X	X	X				X			X	X	X			
Commercial & Domestic Water Use			X				X			X	X	X			
ESTUARINE ACTIVITIES															
Dredging	X	X	X	X			X			X	X	X		X	
Disposal/Fills															
Disposal of Dredged Material	X			X			X			X	X	X		X	
Fill Material	X	X	X	X			X			X	X	X		X	
Vessel Operations/ Transportation/Navigation	X				X		X		X	X	X		X		
Introduction of Exotic Species												X	X	X	
Pile Installation and Removal															
Pile Driving		X	X				X			X	X				
Pile Removal		X	X				X			X	X				
Overwater Structures		X	X	X			X					X		X	
Flood Control/Shoreline Protection	X	X	X				X					X		X	
Water Control Structures	X	X	X				X					X		X	
Log Transfer Facilities/ In-water Log Storage	X			X			X	X				X		X	
Utility line/Cables/Pipeline Installation							X			X	X				
Commercial Resource Harvesting	X						X	X		X	X	X		X	
COASTAL /MARINE ACTIVITIES															
Point Source Discharge				X			X	X	X	X	X	X		X	
Fish Processing Waste - Shoreside and Vessel Operation	X			X			X	X	X			X		X	
Water Intake Structures/Discharge Plumes			X				X			X	X	X		X	
Oil/Gas Exploration/Development/Production		X	X		X		X		X						
Habitat Restoration/Enhancement	X	X	X				X							X	
Marine mining	X	X	X				X		X	X	X	X		X	
Persistent Organic Pollutants						X	X		X	X		X		X	

[1] The worksheet is a professional interpretive summary of broad categories of threats as they relate directly to Alaska. They are described in greater detail in Appendix G, "Non-fishing activities to EFH and recommended conservation measures."

Table 3.4-37. Summary of Effects Determination of Non-fishing Threats to Essential Fish Habitat in Alaska [1/]

	Effects [/1]			
	Past	**Present**	**Future**	**Comments**
UPLAND ACTIVITIES				
Non-point Source Pollution				
Agricultural/Nursery Runoff	E-	E-	E-	Minimal agriculture in Alaska.
Silviculture/Timber Harvest	E-	E-	E-	Forest Practices Act has reduced impacts.
Pesticide Application	U	E-	E-	Minimal pesticide use in Alaska.
Urban/Suburban Development	E-	E-	E-	Urban centers expanding into marginal wetland areas due to lack of space.
Road Building and Maintenance	E-	E-	E-	Wetland fill and fish passage are issues.
RIVERINE ACTIVITIES				
Mining				
Mineral Mining	E-	E-	E-	Improved regulations and best management practices have reduced impacts.
Sand and Gravel Mining	E-	E-	E-	Improved oversight and best management practices have reduced impacts so that impacts to gravel removal from streams are generally short term.
Debris				
Organic Debris Removal	E-	0	0	Impacts statewide are minimal, but can be locally significant. Forest Practices Act has reduced impacts.
Inorganic Debris	E-	E-	E-	Improved regulations and enforcement have reduced impacts.
Dam Operations	U	U	U	Has not been identified as a major issue in Alaska.
Commercial and Domestic Water Use	U	U	U	Has not been identified as a major issue in Alaska.
ESTUARINE ACTIVITIES				
Dredging	E-	E-	E-	Impacts statewide are minimal, but can be locally significant.
Disposal/Landfills				
Disposal of Dredged Material	E-	E-	E-	Impacts statewide are minimal, but can be locally significant. Existing ports and harbors are expanding and new facilities are planned.
Fill Material	E-	E-	E-	Urban centers expanding into wetlands and coastal areas due to lack of upland areas.
Vessel Operations/ Transportation/Navigation	E-	E-	E-	Ports, harbors, and docks are increasing in many locations and have localized impacts.
Introduction of Exotic Species	0	E-	U	Some movement of nonindigenous species within state e.g., northern pike.
Pile Installation and Removal				
Pile Driving	E-	0	0	Improved regulations and best management practices have reduced impacts.
Pile Removal	0	0	0	Has not been identified as a major issue in Alaska.
Overwater Structures	E-	E-	E-	Impacts statewide effects are minimal, but can be locally significant.
Flood Control/Shoreline Protection	E-	E-	E-	Impacts statewide are minimal, but can be locally significant e.g., Kenai River.
Water Control Structures	U	U	U	Few structures are located statewide.
Log Transfer Facilities/In-water Log Storage	E-	E-	E-	Long-term impacts have resulted in some locations. The ATTF Guidelines have reduced impacts.

Table 3.4-37. Summary of Effects Determination of Non-fishing Threats to Essential Fish Habitat in Alaska [1/] (continued)

	Effects [/1]			
	Past	**Present**	**Future**	**Comments**
Utility line/Cables/Pipeline Installation	0	0	U	Minimal impact statewide, future is unknown, dependent on offshore oil and gas development.
Commercial Utilization of Habitat	0	0	U	Little past or present use, but could develop in future (clam farming).
COASTAL/MARINE ACTIVITIES				
Point Source Discharge	E-	E-	E-	Localized impacts related to pulp mills and municipal waste discharges in past and present. Future dependent on regulatory oversight and future development.
Fish Processing Waste - Shoreside and Vessel Operation	E-	E-	E-	Impacts statewide are minimal, but can be locally significant.
Water Intake Structures /Discharge Plumes	0	0	U	Minimal impact statewide, future is unknown, dependent on development such as hydropower.
Oil/Gas Exploration/ Development/Production	E-	E-	U	Minimal impact in past due to significant regulatory oversight. Unknown in future dependent on development and continued oversight.
Habitat Restoration/Enhancement	E+	E+	E+	Most habitat statewide is intact. Minimal opportunities for restoration and enhancement.
Marine Mining	E-	E-	U	Regulatory oversight minimizes impacts.
Persistent Organic Pollutants	U	E-	U	Dependent on international agreements and national policy.

[1/] Categories of Effects:
E+ Effect positive
0 Insignificant or No Effect
E- Effect negative
U Unknown

Table 4.1-1. Criteria for Describing the Effects on Habitat of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Habitat complexity (living substrates such as sessile epifauna or submerged aquatic vegetation)	Potential for removal or damage of living substrates that provide habitat for managed species	Increase in the rate of removal or damage of living substrates	Minimal potential for change in the rate of removal or damage of living substrates	Decrease in the rate of removal or damage of living substrates	Magnitude and/or direction of effects are unknown
Habitat complexity (non-living substrates such as rock or cobble)	Potential for modification of nonliving substrate and/or damage to infauna	Increase in the rate of removal or damage of non-living substrates	Minimal change in the rate of removal or damage of non-living substrates	Decrease in the rate of removal or damage of non-living substrates	Magnitude and/or direction of effects are unknown
Benthic biodiversity	Potential for change in biodiversity of benthic habitats	Decrease in the number of species present in an area	Minimal likelihood of a change in the number of species present in an area	Increase in the number of species present in an area	Magnitude and/or direction of effects are unknown
Habitat suitability	Potential for changing the suitability of habitat to maintain productivity for managed species	Decrease in habitat suitability over time due to human activities	Minimal change in habitat suitability over time due to human activities	Increase in habitat suitability over time due to human activities	Magnitude and/or direction of effects are unknown
Prey species	Potential for adverse effects on populations of significant prey resources for FMP species, and their habitat	Increase in catch, or reduction in populations, of prey species (e.g., smelt, pollock, herring)	Minimal changes in catch or populations of prey species (e.g., smelt, pollock, herring)	Decrease in catch, or increase in populations, of prey species (e.g., smelt, pollock, herring) are likely	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.1-2. Criteria for Describing the Effects on Target Species of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Fishing mortality	Potential for catch of fish to jeopardize the capacity to produce maximum sustainable yield on a continuing basis	Increases in fishing mortality likely	Minimal changes in fishing mortality expected	Decreases in fishing mortality likely	Magnitude and/or direction of effects are unknown
Spatial/temporal concentration of catch	Potential for uneven catch to change genetic structure of population	Increased likelihood for localized harvests	Substantial changes in localized harvests not anticipated	Decreased likelihood for localized harvests	Magnitude and/or direction of effects are unknown
Productivity	Potential for changing the reproductive success of stocks	Reductions in stock productivity expected	No changes in stock productivity anticipated	Increases in stock productivity expected	Magnitude and/or direction of effects are unknown
Prey availability	Potential for adverse effects on populations of significant prey resources for FMP species	Reductions in prey populations, or increases in catch of prey likely	No changes in prey availability anticipated	Increases in prey populations, or decreases in catch of prey likely	Magnitude and/or direction of effects are unknown
Growth to maturity	Potential for changing the survival rates of managed species (survival until marketable size)	Decrease in the survival rate of fish to marketable size	Negligible effect on the survival rate of fish to marketable size	Increase in the survival rate of fish to marketable size	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.1-3. Criteria for Describing the Effects on the Economic and Socioeconomic Aspects of Federally Managed Fisheries of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Passive use	Potential for reduced passive use value	Reductions in passive use value are anticipated	No substantial changes in passive use value are anticipated	Increases in passive use value are anticipated	Magnitude and/or direction of effects are unknown
Gross revenue	Potential for reduced revenues for affected fishing sectors	Reductions in revenue are anticipated	No substantial changes in revenue to the fishing fleet or processing sector expected	Increases in revenue anticipated	Magnitude and/or direction of effects are unknown
Operating costs	Potential to increase operating costs for fishing vessels and/or processing facilities	Relocation of fishing effort will be required, or catch rates will be reduced	No substantial changes in operating costs expected	Relocation of fishing effort will not be required, or catch rates will not be reduced	Magnitude and/or direction of effects are unknown
Costs to consumers	Potential to increase the retail price of fish	Higher prices for consumers are expected	No substantial changes in retail prices for fish are expected	Lower prices for consumers expected	Magnitude and/or direction of effects are unknown
Safety	Potential to increase casualties, accidents, or injuries during fishing operations	Increased risk of accidents and injuries is expected	No changes in overall safety are expected	Reduced risk of accidents and injuries expected	Magnitude and/or direction of effects are unknown
Socioeconomic effects on fishing communities	Potential for adverse effects on the economy of coastal communities	Reduction in community revenues and employment are anticipated	No substantial effects on communities are expected	Increase in community revenues and employment are anticipated	Magnitude and/or direction of effects are unknown
Effects on regulatory and enforcement programs	Potential for increasing costs and complexity of regulations, monitoring, and enforcement	Increased number and complexity of closures and quotas; additional staff and resources needed for monitoring and enforcement	No substantial changes in regulatory or enforcement requirements are expected	Reduced number and complexity of closures and quotas; fewer staff and resources needed for monitoring and enforcement	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.1-4. Criteria for Describing the Effects on Other Fisheries and Fishery Resources of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Halibut fishery	Potential changes in catch and/or biomass of halibut, or added costs to fleet	Reductions in halibut biomass or catch, or added costs to the fleet	No substantial changes in catch or biomass expected; may have only minimal costs to fleet	Increased halibut biomass or catch, or decreased costs to the fleet	Magnitude and/or direction of effects are unknown
State managed groundfish fisheries	Potential changes in catch and/or biomass of cod, pollock, sablefish, rockfish, lingcod	Reductions in groundfish biomass or catch, or added costs to the fleet	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increased groundfish biomass or catch, or decreased costs to the fleet	Magnitude and/or direction of effects are unknown
State managed crab fisheries	Potential changes in catch and/or biomass of GOA Tanner and king crabs, BS hair crab	Reductions in crab biomass or catch, or added costs to the fleet	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increased crab biomass or catch, or decreased costs to the fleet	Magnitude and/or direction of effects are unknown
Herring fisheries	Potential changes in catch and/or biomass of herring	Reductions in herring biomass or catch, or added costs to the fleet	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increased herring biomass or catch, or decreased costs to the fleet	Magnitude and/or direction of effects are unknown
Salmon fisheries	Potential changes in catch and/or biomass of salmon	Reductions in salmon biomass or catch, or added costs to the fleet	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increased salmon biomass or catch, or decreased costs to the fleet	Magnitude and/or direction of effects are unknown
Forage fish and other species	Potential for changes in catch and/or biomass of forage fish and other fish species	Reductions in biomass or catch	No substantial changes in catch or biomass expected	Increases in biomass or catch	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.1-5. Criteria for Describing the Effects on Protected Resources of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
ESA-listed salmon	Potential to affect habitat for ESA listed salmon	Increased adverse effects to habitat for ESA listed salmon	No substantial change in effects on habitat for ESA listed salmon	Reduced adverse effects to habitat for ESA listed salmon	Magnitude and/or direction of effects are unknown
ESA-listed marine mammals	Potential to affect habitat for ESA listed marine mammals	Increased adverse effects to habitat for ESA listed marine mammals	No substantial changes in effects on habitat for ESA listed marine mammals	Reduced adverse effects to habitat for ESA listed marine mammals	Magnitude and/or direction of effects are unknown
Other marine mammals	Potential to affect habitat for other marine mammals	Increased adverse effects to habitat for other marine mammals	No substantial changes in effects on habitat for other marine mammals	Reduced adverse effects to habitat for other marine mammals	Magnitude and/or direction of effects are unknown
ESA-listed seabirds	Potential to affect habitat for ESA listed seabirds	Increased adverse effects to habitat for ESA listed seabirds	No substantial changes in effects on habitat for ESA listed seabirds	Reduced adverse effects to habitat for ESA listed seabirds	Magnitude and/or direction of effects are unknown
Other seabirds	Potential to affect habitat for other seabirds	Increased adverse effects to habitat for other seabirds	No substantial changes in effects on habitat for other seabirds	Reduced adverse effects to habitat for other seabirds	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.1-6. Criteria for Describing the Effects on Ecosystems and Biodiversity of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Predator-prey relationships	Potential for changes in forage fish populations, removal of top predators, or introduction of non-native species	Reductions in forage fish populations, increased catch of higher trophic level species, and/or an increased risk of exotic species introductions	No substantial changes in prey populations, or catch from higher trophic levels, or non-native species introductions	Increases in forage fish populations, reduced catch of higher trophic level species, and/or a reduced risk of exotic species introductions	Magnitude and/or direction of effects are unknown
Energy flow and balance	Potential for changes in energy redirection and energy removal	Substantial increases in total catch and/or discards	No substantial changes in total catch or discards	Substantial reductions in total catch and/or discards	Magnitude and/or direction of effects are unknown
Diversity	Potential for changes in species, trophic, and genetic diversity	Increased risk of species extinction and trophic level changes, and/or increased fishing on spawning aggregations or larger fish	No changes in extinction rates or trophic level removals, or selective fishing patterns	Reduced risk of species extinction and trophic level changes, and/or reduced fishing on spawning aggregations or larger fish	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.1-7. Criteria for Describing the Effects on Non-fishing Activities of Identifying EFH and HAPCs

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Costs to federal and state agencies	Potential to increase costs to agencies engaged in EFH consultations	Increase in the cost of authorizing, funding, or undertaking non-fishing actions	No effect on the cost of authorizing, funding, or undertaking non-fishing actions	Decrease in the cost of authorizing, funding, or undertaking non-fishing actions	Magnitude and/or direction of effects are unknown
Costs to non-fishing industries or other proponents of affected activities	Potential to increase costs to industries or other proponents of non-fishing actions due to EFH consultations	Increase in the cost of obtaining permits or funding from federal or state agencies, and/or increase in project costs attributable to conditions to protect fish habitat	No effect on the cost of obtaining permits or funding from federal or state agencies	Decrease in the cost of obtaining permits or funding from federal or state agencies, and/or decrease in project costs attributable to conditions to protect fish habitat	Magnitude and/or direction of effects are unknown

Notes:
E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.3-1. Long-term Effect Indices (LEIs) for Effects of Fishing on Benthic Essential Fish Habitat Features of Alaska, by Alternative

Habitat Feature/ Alternative	AI Shallow	AI Deep	GOA Shallow	GOA Deep Deep Shelf	GOA Slope
Hard Substrates (Pebble - Rock)					
Infauna Prey					
Alt1	0.5%	0.1%	0.7%	0.5%	0.5%
Alt2	0.5%	0.1%	0.7%	0.5%	0.4%
Alt3	0.5%	0.1%	0.7%	0.5%	0.2%
Alt4	0.5%	0.1%	0.7%	0.5%	0.4%
Alt5a	0.5%	0.1%	0.7%	0.5%	0.2%
Alt5b	0.5%	0.1%	0.7%	0.5%	0.2%
Alt6	0.5%	0.1%	0.7%	0.4%	0.4%
Epifauna Prey					
Alt1	0.8%	0.2%	0.7%	0.8%	0.8%
Alt2	0.8%	0.2%	0.7%	0.8%	0.8%
Alt3	0.8%	0.2%	0.7%	0.8%	0.4%
Alt4	0.8%	0.2%	0.7%	0.8%	0.8%
Alt5a	0.8%	0.2%	0.7%	0.8%	0.3%
Alt5b	0.8%	0.2%	0.7%	0.8%	0.3%
Alt6	0.8%	0.2%	0.7%	0.7%	0.7%
Biological Structure					
Alt1	7.3%	2.4%	4.9%	6.2%	8.7%
Alt2	7.3%	2.4%	4.9%	6.2%	8.3%
Alt3	7.3%	2.4%	5.0%	6.6%	5.0%
Alt4	7.1%	2.4%	4.9%	6.2%	8.3%
Alt5a	7.1%	2.3%	4.9%	6.3%	4.0%
Alt5b	6.9%	2.1%	4.9%	6.3%	4.0%
Alt6	6.8%	2.3%	4.6%	5.5%	7.3%
Nonliving Structure					
Alt1	4.7%	1.5%	3.3%	4.1%	5.4%
Alt2	4.7%	1.5%	3.3%	4.1%	5.1%
Alt3	4.7%	1.5%	3.3%	4.4%	3.0%
Alt4	4.6%	1.5%	3.3%	4.1%	5.1%
Alt5a	4.6%	1.5%	3.3%	4.2%	2.3%
Alt5b	4.5%	1.4%	3.3%	4.2%	2.3%
Alt6	4.4%	1.4%	3.1%	3.7%	4.5%
Hard Corals					
Alt1	15.8%	6.2%	10.0%	13.0%	19.9%
Alt2	15.8%	6.2%	10.0%	12.9%	18.8%
Alt3	15.8%	6.2%	10.1%	13.3%	12.5%
Alt4	15.1%	5.8%	10.0%	12.9%	18.8%
Alt5a	15.0%	5.7%	10.0%	13.0%	10.6%
Alt5b	14.0%	4.9%	10.0%	13.0%	10.6%
Alt6	13.9%	5.6%	9.0%	10.9%	16.0%

Table 4.3-1. Long-term Effect Indices (LEIs) for Effects of Fishing on Benthic Essential Fish Habitat Features of Alaska, by Alternative (continued)

Habitat Feature/ Alternative	BS Sand	BS Sand/Mud	BS Mud	BS Slope	AI Shallow	AI Deep	GOA Shallow	GOA Deep Shelf	GOA Slope
Soft Substrates (Mud - Gravel)									
Infauna Prey									
Alt1	0.5%	2.0%	0.1%	3.5%	0.5%	1.1%	0.2%	0.6%	0.6%
Alt2	0.5%	2.0%	0.1%	3.5%	0.5%	1.1%	0.2%	0.6%	0.6%
Alt3	0.5%	2.0%	0.1%	3.5%	0.5%	1.1%	0.2%	0.6%	0.4%
Alt4	0.4%	1.9%	0.0%	3.4%	0.5%	1.1%	0.2%	0.6%	0.6%
Alt5a	0.5%	1.9%	0.0%	3.4%	0.5%	1.1%	0.2%	0.6%	0.3%
Alt5b	0.5%	1.9%	0.0%	3.4%	0.5%	1.1%	0.2%	0.6%	0.3%
Alt6	0.5%	1.9%	0.1%	3.4%	0.5%	1.1%	0.2%	0.5%	0.6%
Epifauna Prey									
Alt1	0.4%	1.6%	0.0%	3.0%	0.4%	1.0%	0.2%	0.5%	0.6%
Alt2	0.4%	1.6%	0.0%	3.0%	0.4%	1.0%	0.2%	0.5%	0.5%
Alt3	0.4%	1.6%	0.0%	3.0%	0.4%	1.0%	0.2%	0.5%	0.4%
Alt4	0.4%	1.6%	0.0%	2.9%	0.4%	1.0%	0.2%	0.5%	0.5%
Alt5a	0.4%	1.6%	0.0%	2.9%	0.4%	1.0%	0.2%	0.5%	0.3%
Alt5b	0.4%	1.6%	0.0%	2.9%	0.4%	1.0%	0.2%	0.5%	0.3%
Alt6	0.4%	1.6%	0.1%	2.9%	0.4%	1.0%	0.2%	0.5%	0.5%
Biological Structure									
Alt1	3.9%	10.9%	0.3%	10.9%	3.8%	2.6%	2.9%	3.3%	3.5%
Alt2	3.9%	10.9%	0.3%	10.9%	3.8%	2.6%	2.9%	3.3%	3.4%
Alt3	3.9%	10.9%	0.3%	10.9%	3.8%	2.6%	2.9%	3.4%	2.2%
Alt4*	4% (3%)	10% (9%)	0% (0%)	10% (9%)	3.8%	2.6%	2.9%	3.3%	3.4%
Alt5a*	4% (3%)	10% (9%)	0% (0%)	10% (9%)	3.8%	2.6%	2.9%	3.3%	1.9%
Alt5b*	4% (3%)	10% (9%)	0% (0%)	10% (9%)	3.8%	2.5%	2.9%	3.3%	1.9%
Alt6	3.7%	9.8%	0.3%	10.0%	3.7%	2.5%	2.7%	3.0%	3.1%
Nonliving Structure									
Alt1	0.3%	1.5%	0.1%	4.1%	0.5%	0.3%	0.2%	0.3%	0.5%
Alt2	0.3%	1.5%	0.1%	4.1%	0.5%	0.3%	0.2%	0.3%	0.5%
Alt3	0.3%	1.5%	0.1%	4.1%	0.5%	0.3%	0.2%	0.3%	0.4%
Alt4	0.3%	1.4%	0.1%	4.0%	0.5%	0.3%	0.2%	0.3%	0.5%
Alt5a	0.3%	1.4%	0.1%	3.9%	0.5%	0.3%	0.2%	0.3%	0.4%
Alt5b	0.3%	1.4%	0.1%	3.9%	0.5%	0.3%	0.2%	0.3%	0.4%
Alt6	0.3%	1.4%	0.1%	3.9%	0.5%	0.3%	0.2%	0.3%	0.4%

Source: Appendix B

Notes: GOA - Gulf of Alaska, AI - Aleutian Islands, BS Bering Sea

* - Values in parentheses include an effect for gear modification assuming that damage under the raised sections of sweeps and bridles (minimum 3-inch average clearance) is reduced by 50%. No testing has been done to validate this approach.

Table 4.3-2. Percent of Area Closed to all Nonpelagic Trawling by Habitat for Principal Coral Habitats

	Percent of Habitat Type				
	Alternatives 1-3	**Alternative 4**	**Alternative 5A**	**Alternative 5B**	**Alternative 6**
Gulf of Alaska Slope	19%	19%	29%	29%	32%
Aleutian Shallow	4%	13%	18%	44%	33%
Aleutian Deep	0%	20%	31%	68%	26%

Table 4.3-3. Criteria for Describing the Effects on Essential Fish Habitat of Minimizing the Effects of Fishing

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Prey species	Potential for changes in the availability of prey organisms to managed species	Reductions in availability of prey organisms are expected	No substantial changes in availability of prey organisms are expected	Increases in availability of prey organisms are expected	Magnitude and/or direction of effects are unknown
Habitat complexity	Potential for changes in the three dimensional structure of epibenthic habitats and resulting effects on spawning, breeding and growth to maturity	Reductions in organisms or physical structures providing potential habitat functions for managed species	No substantial changes in organisms or physical structures providing potential habitat functions for managed species	Increases in organisms or physical structures providing potential habitat functions for managed species	Magnitude and/or direction of effects are unknown
Habitat biodiversity	Potential loss of structure forming species with recovery periods approaching a century or longer and effects on any dependant species	Decreases in trawl closures in habitat types with coral structure, or increases in closures of productive fishing grounds that would displace effort into new grounds having coral habitat types	No changes in protection of such structures	Increases in trawl closures in habitat types with coral structure, or decreases in closures of productive fishing grounds that shift effort away from grounds having coral habitat types	Magnitude and/or direction of effects are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Table 4.3-4. Criteria for Describing the Effects on FMP Groundfish of Minimizing the Effects of Fishing

	Intensity of Effect			
Issue	**E-**	**Ø**	**E+**	**U**
Stock Biomass: Potential for increasing mortality and reducing stock size	Changes in fishing mortality are expected to jeopardize the ability of the stock to sustain itself at or above its MSST relative to status quo	Changes in fishing mortality are expected to maintain the stock's ability to sustain itself above the MSST relative to status quo	Changes in fishing mortality are expected to substantially enhance the stocks ability to sustain itself at or above its MSST relative to status quo	Magnitude and/or direction of effects relative to status quo are unknown
Spatial/Temporal concentration of catch: Potential for uneven catch to change genetic structure of population	Effects of alternative expected to lead to a substantial reduction in genetic diversity relative to status quo	Effects of alternative expected to lead to no substantial effects on genetic diversity relative to status quo	Effects of alternative expected to lead to a substantial increase in genetic diversity relative to status quo	Magnitude and/or direction of effects relative to status quo are unknown
Spawning/Breeding: Potential for adverse effects on the reproductive success of stocks	Alternative expected to have a substantial negative effect on essential spawning, nursery, or settlement habitat relative to status quo	Fishing anticipated to have no substantial effects on essential spawning, nursery, or settlement habitat relative to status quo	Alternative expected to have a substantial positive effect on essential spawning, nursery, or settlement habitat relative to status quo	Magnitude and/or direction of effects relative to status quo are unknown
Feeding: Potential for adverse effects on availability of significant prey resources for FMP species	Effects of alternative on habitat expected to have a substantial negative effect on essential prey availability relative to status quo	Fishing anticipated to have no substantial effects on essential prey availability relative to status quo	Effects of alternative on habitat expected to have a substantial positive effect on essential prey availability relative to status quo	Magnitude and/or direction of effects relative to status quo are unknown
Growth to Maturity: Potential for changing the survival rates of managed species as they are growing to maturity	Effects of alternative on essential habitat expected to have a substantial negative effect on survival of fish to maturity relative to status quo	Fishing anticipated to have no substantial effects on the survival of fish to maturity relative to status quo	Effects of alternative on essential habitat expected to have a substantial positive effect on survival of fish to maturity relative to status quo	Magnitude and/or direction of effects relative to status quo are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Note: Each alternative is compared to the status quo. Also, the primary consideration for all of these issues is the health of the stock, which is measured as its ability to maintain itself at or above its Minimum Stock Size Threshold (MSST).

Table 4.3-5. Criteria for Describing the Effects on FMP Salmon, Crabs, and Scallops of Minimizing the Effects of Fishing

	Intensity of Effect			
Issue	**E-**	**Ø**	**E+**	**U**
Stock Biomass: Potential for increasing mortality and reducing stock size	Changes in fishing mortality are expected to jeopardize the ability of the stock to sustain itself at or above its MSST	Changes in fishing mortality are expected to maintain the stock's ability to sustain itself above the MSST	Changes in fishing mortality are expected to enhance the stocks ability to sustain itself at or above its MSST	Magnitude and/or direction of effects are unknown
Spatial/Temporal concentration of catch: Potential for uneven catch to change genetic structure of population	Effects of alternative expected to lead to a detectable reduction in genetic diversity	Effects of alternative expected to lead to no substantial effects on genetic diversity	Effects of alternative expected to lead to a detectable increase in genetic diversity	Magnitude and/or direction of effects are unknown
Spawning/Breeding: Potential for adverse effects on the reproductive success of stocks	Alternative expected to have a negative effect on essential spawning, nursery, or settlement habitat	Fishing anticipated to have no substantial effects on essential spawning, nursery, or settlement habitat	Alternative expected to have a positive effect on essential spawning, nursery, or settlement habitat	Magnitude and/or direction of effects are unknown
Feeding: Potential for adverse effects on availability of significant prey resources for FMP species	Effects of alternative on habitat expected to have a negative effect on essential prey availability	Fishing anticipated to have no substantial effects on essential prey availability	Effects of alternative on habitat expected to have a positive effect on essential prey availability	Magnitude and/or direction of effects are unknown
Growth to Maturity: Potential for changing the survival rates of managed species as they are growing to maturity	Effects of alternative on essential habitat expected to have a negative effect on survival of fish to maturity	Fishing anticipated to have no substantial effects on the survival of fish to maturity	Effects of alternative on essential habitat expected to have a positive effect on survival of fish to maturity	Magnitude and/or direction of effects are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Note: Each alternative is to be compared to the status quo. Also, the primary consideration for all of these issues is the health of the stock, which is measured as its ability to maintain itself at or above its MSST.

Table 4.3-6. Criteria for Describing the Effects on the Economic and Socioeconomic Aspects of Federally Managed Fisheries of Minimizing the Effects of Fishing

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Passive use	Potential for reducing existence value and ecotourism value	Reduction in biomass of corals, sponges and other charismatic epifauna are anticipated	No substantial changes in the biomass of charismatic epifauna are anticipated	Increases in biomass of corals, sponges and other charismatic epifauna are anticipated	Magnitude and/or direction of effects are unknown
Gross revenue	Potential for reduced revenues for affected fishing sectors	Substantial reductions in revenues are anticipated relative to status quo	No substantial changes in revenues to the fishing fleet or processing sector are expected	Substantial increases in revenues are anticipated relative to status quo	Magnitude and/or direction of effects are unknown
Operating costs	Potential to increase operating costs for fishing vessels and processing facilities	Substantial relocation of fishing effort required, or catch rates will be substantially reduced	No substantial changes in operating costs are expected	Relocation of fishing effort will be minimal, or catch rates will be substantially increase	Magnitude and/or direction of effects are unknown
Costs to U.S. consumers	Potential to increase the retail price of fish consumed in the U.S.	Higher prices for consumers are expected relative to status quo	No substantial changes in retail prices for fish are expected	Lower prices for consumers are expected relative to status quo	Magnitude and/or direction of effects are unknown
Safety	Potential to increase casualties, accidents, or injuries during fishing operations	Increased risk of accidents and injuries relative to status quo	No changes in overall safety are expected	Reduced risk of accidents and injuries relative to status quo	Magnitude and/or direction of effects are unknown
Socioeconomic effects on fishing communities	Potential for adverse effects on the economy of coastal communities	Substantial reduction in community revenues and employment are anticipated	No substantial effects on communities are expected	Substantial increases in community revenues and employment are anticipated	Magnitude and/or direction of effects are unknown
Effects on regulatory and enforcement programs	Potential for increasing costs and complexity of regulations, monitoring, and enforcement	Increased number and complexity of closures and quotas; additional staff and resources would be needed for monitoring and enforcement	No substantial changes in regulatory or enforcement requirements	Reduced number and complexity of closures and quotas; fewer staff and resources would be required for monitoring and enforcement	Magnitude and/or direction of effects are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Table 4.3-7. Criteria for Describing the Effects on Other Fisheries and Fishery Resources of Minimizing the Effects of Fishing

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Halibut fishery	Potential changes in catch and/or biomass of halibut, or added costs to fleet	Reductions in halibut biomass or catch, or added costs to the fleet to catch the fish are expected relative to status quo	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increases in halibut biomass or catch, or added costs to the fleet to catch the fish are expected relative to the status quo	Magnitude and/or direction of effects are unknown
State-managed groundfish fisheries	Potential changes in catch and/or biomass of cod, pollock, sablefish, rockfish lingcod	Reductions in biomass or catch, or added costs to the fleet to catch the fish are expected relative to status quo	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increases in biomass or catch, or added costs to the fleet to catch the fish are expected relative to the status quo	Magnitude and/or direction of effects are unknown
State-managed crab fisheries	Potential changes in catch and/or biomass of GOA Tanner and king crabs, BS hair crab	Reductions in crab biomass or catch, or added costs to the fleet to catch the fish are expected relative to status quo	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increases in crab biomass or catch, or added costs to the fleet to catch the fish are expected relative to the status quo	Magnitude and/or direction of effects are unknown
Herring fisheries	Potential changes in catch and/or biomass of herring	Reductions in herring biomass or catch, or added costs to the fleet to catch the fish are expected relative to status quo	No substantial changes in catch or biomass expected; may have only minimal costs to the fleet	Increases in herring biomass or catch, or added costs to the fleet to catch the fish are expected relative to the status quo	Magnitude and/or direction of effects are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Table 4.3-8. Criteria for Describing the Effects on Protected Species of Minimizing the Effects of Fishing

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
ESA-listed salmon	Potential to increase incidental take of listed salmon; increase in fishery bycatch of prey (squid, herring)	Increases in the bycatch of salmon are likely; increases in fishery bycatch of salmon prey are likely	No substantial change in salmon bycatch or prey is anticipated	Reductions in the bycatch of salmon are likely; decrease in bycatch of prey is likely	Magnitude and/or direction of effects are unknown
ESA-listed marine mammals	Potential to increase incidental take or disturbance of listed marine mammals; fishery may reduce prey availability	Increases in fishing effort are anticipated, thus increasing likelihood of takes and disturbance; increases in fishery removal of prey is likely; fishing effort expected to concentrate in listed marine mammal feeding or resting areas	No substantial changes in fishing effort in listed marine mammal habitat is anticipated; no substantial prey removals are expected; fishing effort redistribution is unlikely to occur in important mammal areas	Reductions in fishing effort are anticipated, thus reducing likelihood of takes and disturbance; decreases in fishery removal of prey is likely; reduced fishing effort in listed marine mammal feeding or resting areas is likely	Magnitude and/or direction of effects are unknown
Other marine mammals	Potential to increase incidental take or disturbance of marine mammals; fishery may reduce prey availability	Increases in fishing effort are anticipated, thus increasing likelihood of takes and disturbance; increases in fishery removal of prey is likely; fishing effort expected to concentrate in marine mammal feeding or resting areas	No substantial changes in fishing effort in marine mammal habitat is anticipated; no substantial prey removals are expected; fishing effort redistribution is unlikely to occur in important mammal areas	Reductions in fishing effort are anticipated, thus reducing likelihood of takes and disturbance; decreases in fishery removal of prey is likely; reduced fishing effort in marine mammal feeding or resting areas is likely	Magnitude and/or direction of effects are unknown

Table 4.3-8. Criteria for Describing the Effects on Protected Species of Minimizing the Effects of Fishing (continued)

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
ESA-listed seabirds	Potential to increase incidental take or disturbance of listed seabirds; fishery may reduce prey availability; fishery discards or offal production increases or decreases are both +/- (see note below)	Increases in fishing effort are anticipated thus increasing likelihood of mortality of listed seabirds in bycatch or vessel or gear or rigging strikes; increases in fishery removal of prey is likely; fishing activities expected to concentrate in seabird foraging areas	No substantial changes in fishing effort in listed seabird habitat is anticipated; no changes are expected in listed seabird injury or mortality; no substantial prey removals are expected	Reductions in fishing effort and reductions in listed seabird mortality are likely; fishery removals of prey are expected to decrease; fishing activities in listed seabird foraging areas likely will be reduced	Magnitude and/or direction of effects are unknown
Other seabirds	Potential to increase incidental take or disturbance of seabirds; fishery may reduce prey availability; fishery discards or offal production increases or decreases are both +/-	Increases in fishing effort are anticipated thus increasing likelihood of mortality of seabirds in bycatch or vessel or gear or rigging strikes; increases in fishery removal of prey is likely; fishing activities expected to concentrate in seabird foraging areas	No substantial changes in fishing effort in seabird habitat is anticipated; no changes are expected in seabird injury or mortality; no substantial prey removals are expected	Reductions in fishing effort and reductions in seabird mortality are likely; fishery removals of prey are expected to decrease; fishing activities in seabird foraging areas likely will be reduced	Magnitude and/or direction of effects are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Note: Offal or discards from fishing activities may attract seabirds and increase the potential for seabird bycatch or vessel strike mortalities, and offal and discards may provide important food items for seabirds; thus offal and discards are considered both negative and positive and are self canceling in this analysis.

Table 4.3-9. Criteria for Describing the Effects on Ecosystem Processes of Minimizing the Effects of Fishing

		Intensity of Effect			
Issue	**Concern**	**E-**	**Ø**	**E+**	**U**
Predator-prey relationships	Potential for changes in forage fish populations, removal of top predators, and introduction of non-native species	Reductions in forage fish populations, increased catch of higher trophic level species, and/or an increased risk of exotic species introductions are expected relative to the status quo	No substantial changes in prey populations, or catch from higher tropic levels, or non-native species introductions are expected relative to the status quo	Increases in forage fish populations, reduced catch of higher trophic level species, and/or a reduced risk of exotic species introductions are expected relative to the status quo	Magnitude and/or direction of effects are unknown
Energy flow and balance	Potential for changes in energy re-direction and energy removal	Substantial increases in total catch and/or discards are expected relative to the status quo	No substantial changes in total catch or discards are expected relative to the status quo	Substantial reductions in total catch and/or discards are expected relative to the status quo	Magnitude and/or direction of effects are unknown
Diversity	Potential for changes in species, functional (trophic and structural habitat), and genetic diversity	Increased risk of species extinction and trophic level changes, and/or increased fishing on structural habitat organisms or spawning aggregations or larger fish than expected relative to the status quo	No changes in extinction rates or trophic level removals, or selective fishing patterns are expected relative to the status quo	Reduced risk of species extinction and trophic level changes, and/or reduced fishing on structural habitat organisms or spawning aggregations or larger fish than expected relative to the status quo	Magnitude and/or direction of effects are unknown

E- = Effect negative, Ø = No Effect, E+ = Effect positive, U = Unknown

Table 4.4-1. Environmental Consequences Summary

Criterion	Past and Present Trends	External Factors				Future Mgmt. Actions	EFH - Designation Alternatives						HAPC - Designation Alternatives					Alternatives to Minimize the Effects of Fishing on EFH						
		Foreign & Subsistence Fishing	Pollution	Climatic Cycles	Non-Fishing Activities		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5A	5B	6
Habitat																								
Prey Species	Historic fishing activity may have had localized negative effects on prey species.	Historic bottom fishing may have destroyed coral and otherwise altered bottom habitats.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Benthic Biodiversity	Where fishing activity has been heavy, it may have destroyed coral and otherwise altered bottom habitats.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0	0	E+	E+	E+	E+	E+
Habitat Complexity	Historic and current trawl fisheries may have had a negative effect on benthic habitat complexity in some areas.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0	0	E+	0	E+	E+	E+
Target Species - Groundfish																								
Groundfish Fishing Mortality and Stock Biomass	Most of the target groundfish species in the BSAI and GOA are above MSST and considered to have stable biomass.	Very small percentage of the total fishing effort - no effect likely.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	0	0	0	0	0	0	E-	0	E+	E+	E+	0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Spatial/Temporal Concentration of Catch	Currently groundfish catch concentrations are stable; however, trends are unknown.		U	E+/E-		E+	E+	0	E-	E-	E-	E-	E+	0	E-	E-	E-	0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Productivity (spawning/breeding)	Most species of groundfish have stable levels of spawning/breeding success. Some species are negatively affected by contact with fishing nets. Spawning and breeding success for some groups of groundfish is unknown.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Prey Availability (feeding)	Food resources and feeding habits for many of the target groundfish species are considered stable. Food availability and feeding habits for some groundfish species are unknown.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0/U	0/U	0/U	0/U	0/U	0/U	0/U
Groundfish Growth to Maturity	Many of the target groundfish species are considered to have stable rates of growth to maturity. For some groups of groundfish, the trend is unknown, while others are potentially at risk due to fishing activities.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0/U	0/U	0/U	0/U	0/U	0/U	0/U
Target Species - Crab, Scallop, Salmon																								
Crab, Scallop, and Salmon Fishing Mortality	**Salmon** that spawn in Alaska display a stable trend. **Crab** display a stable trend; some stocks are approaching over-fished status. **Scallops** are not over-fished or approaching over-fished status.	Foreign fishing outside the BSAI and GOA will continue to have a negative effect on salmon populations that migrate beyond those boundaries, and their prey. Fishing activities within the BSAI and GOA are not expected to affect salmon, crabs, or scallop populations or their prey significantly.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0/E+ /E-
Crab, Scallop, and Salmon Spatial/Temporal Concentration of Catch	Concentration of fishing effort in time and space for salmon, crab, or scallops could potentially alter the genetic diversity of populations through selective fishing.		U	E+/E-		E+	E+	0	E-	E-	E-	E-	E+	0	E-	E-	E-	0	0	0	0	0	0	0/E-
Crab, Scallop, and Salmon Productivity (spawning/breeding)	The majority of areas in Alaska support healthy stocks of salmon. Nearshore crab habitat may have been damaged by bottom fishing gear in the past. Scallop productivity has been relatively stable.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	0/E-	0	E+	E+	E+	0	0	0	0	0/E+	0/E+	0/E-
Crab, Scallop, and Salmon Prey Availability (feeding)	Most of the prey species of salmon are stable except herring, which is currently declining. Prey for crab is very common and has not been compromised. Dredging activities can both increase and reduce prey availability for scallops.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/0	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Crab, Scallop, and Salmon Growth to Maturity	The rate of growth to maturity for salmon has remained relatively stable. Trawl fishing and dredging may have affected juvenile crabs and scallops, though not significantly overall.		U	E+/E-		E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0	0	0	E+	E+	E+	E+

Positive effect	NA = Not Applicable
Negative effect	U = Unknown Effect
Neutral/positive effect	0 = No Effect
Neutral/negative effect	E- = Negative Effect
	E+ = Positive Effect
	E- / E+ = Mixed Effect

Table 4.4-1. Environmental Consequences Summary (continued)

Criterion	Past and Present Trends	External Factors				Future Mgmt. Actions	EFH - Designation Alternatives						HAPC - Designation Alternatives					Alternatives to Minimize the Effects of Fishing on EFH						
		Foreign & Subsistence Fishing	Pollution	Climatic Cycles	Non-Fishing Activities		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5A	5B	6
Federally Managed Fisheries																								
Passive Use	The trend for passive use or non-consumptive use values is unknown.	The effect of foreign and subsistence fishing on passive use values is unknown.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	E-	0	E+	E+	E+	E+/E-	E-	0	E+	E+	E+	0	E+	E+	E+	E+	E+	E+
Gross Revenue	The number of participating catcher vessels, processors, and motherships is declining. The longevity of inshore processing plants varies by location.	If harvest levels of Alaska groundfish fall as a result of EFH regulation, foreign fisheries could capture market share currently being served by Alaska product.	U	E+/E-		E-	U	0	U	U	U	U	0/U	0	0/U	0/U	0/U	0	0	E-	E-	E-	E-	E-
Operating Costs	Operating costs have increased over time and are expected to continue to do so.	Input costs such as fuel, labor, and insurance fluctuate with world market.	U	E+/E-		E-	E+/E-	0	E-	E-	E-	E-	E+	0	E-/E+	E-/E+	E-/E+	0	E-	E-	E-	E-	E-	E-
Costs to U.S. Consumers	Domestic consumption of fish product has increased.	Costs are affected by demand and trends in world markets.	U	E+/E-		E-	U	0	U	U	U	U	0	0	0	0	0	0	E-	E-	E-	E-	E-	E-
Safety	Rate and severity of injury is decreasing. Search and rescue times are improving. These trends are expected to improve continuously.	NA	U	E+/E-		E-	0	0	0	0	0	0	0	0	0	0	0	0	E-	E-	E-	0	E-	E-
Socioeconomic Effects on Existing Communities	The level of dependence upon fishing activities varies with location along coastal Alaska.	NA	U	E+/E-		E-	E+/E-	0	E-	E-	E-	E-	E+/E-	0	E+/E-	E+/E-	E+/E-	0	0	0	0	0/E-	0/E-	E-
Effects on Regulatory and Enforcement Programs	Recent management actions have increased the cost of some regulatory and enforcement programs.	The primary external factor is continued monitoring and enforcement of foreign fishing.	U	E+/E-		E-	E+	0	E-	E-	E-	E-	E+	0	E-	E-	E-	0	E-	E-	E-	E-	E-	E-
Other Fisheries and Fishery Resources																								
State-managed Groundfish	Cod and sablefish are considered to be declining and at depressed levels. Pollock is considered to be stable though at depressed levels. Lingcod and rockfish populations are apparently stable.	Very small percentage of the total fishing effort - no effect likely.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+/E-	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	E-
State-managed Crab and invertebrate Species	Dungeness crab fisheries in certain locations have been closed following a collapse of these populations. King, tanner, and Korean hair crab populations are severely depressed from over-harvest. Weathervane scallop harvest is at stable levels.	Very small percentage of the total fishing effort - no effect likely.	U	E+/E-		E+/E-	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	E+	0	E+/0	E+/0	E-
Herring	Herring populations have fluctuated historically. Since the 1970s, populations have increased steadily.	Foreign fishing has negatively affected herring populations.	U	E+/E-		0	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Halibut	Halibut populations are healthy with recent catch at record levels.	There is a small amount of bycatch of halibut in foreign fisheries outside the BSAI and GOA boundaries, but not enough to impact US stocks.	U	E+/E-		0	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	E-

Positive effect
Negative effect
Neutral/positive effect
Neutral/negative effect

NA = Not Applicable
U = Unknown Effect
0 = No Effect
E- = Negative Effect
E+ = Positive Effect
E- / E+ = Mixed Effect

Table 4.4-1. Environmental Consequences Summary (continued)

Criterion	Past and Present Trends	External Factors				Future Mgmt. Actions	EFH - Designation Alternatives						HAPC - Designation Alternatives					Alternatives to Minimize the Effects of Fishing on EFH						
		Foreign & Subsistence Fishing	Pollution	Climatic Cycles	Non-Fishing Activities		1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5A	5B	6
Protected Resources																								
ESA Mammals	The whale populations have been depleted by commercial whaling, though some species are slowly recovering. The Steller sea lion population has increased steadily since 1979.	Native Alaska hunters are allowed a harvest quota that is below the potential biological removal of this population. Impacts due to foreign fisheries are considered negligible.	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	E+	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	E-	0/E-/U
Other Mammals	Trends for the 18 protected mammals are unavailable.	Historic foreign fisheries have had lasting negative effects on large marine mammals. Several species of marine mammals are harvested during subsistence hunts.	U	E+/E-		E+	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	0
ESA Salmon	Overharvesting and declining spawning habitat are the most likely causes for the federal ESA listing of 12 salmonid stocks likely to range in Alaska waters.	Directed catch and bycatch by foreign/JV fisheries have had a negative effect on listed salmon and steelhead, which, to a lesser extent, continues today. Subsistence harvest is likely restricted to unlisted salmonids originating in Alaska.	U	E+/E-		E+	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	0
ESA Seabirds	The short tailed albatross population has declined historically, though current trends show a steady increase. In contrast, Steller's eider has dramatically declined and continues to do so.	Some fishing activities impact seabird populations negatively through direct or indirectly caused fatalities.	E-	E+/E-		E+	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Other Seabirds	Some populations of seabirds are increasing (northern fulmar and gulls), while others continue to decline (albatross, kittiwake, eiders). Murre populations are stable.		E-	E+/E-		E+	E-	0	E+	E+	E+	E+	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Ecosystems																								
Predator-Prey Relationships	Trophic levels of the BSAI and GOA are considered stable over the last 40 years.	NA	U	E+/E-	Many upland, riverine, estuarine, and coastal/marine development activities have a negative effect on EFH, though some effects are unknown or neutral.	0/E+	U	0	U	U	U	U	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Energy Flow and Balance	Energy flow and balance are not significantly affected by fishing activities.	NA	U	E+/E-		0/E+	0	0	0	0	0	0	E-	0	E+	E+	E+	0	0	0	0	0	0	0
Biodiversity	Biodiversity trends are unknown, though declines resulting from fishing are possible.	Subsistence fishing could slightly increase risk to diversity on the ecosystem level.	U	E+/E-		0/E+	0	0	0	0	0	0	E-	0	E+	E+	E+	0	0	E+	E+	E+	E+	E+
Non-fishing Activities																								
Costs to Federal and State Agencies	Costs are generally increasing.	Increased regulation of foreign or subsistence fishing would likely increase costs to federal and state agencies.	U	E+/E-	U		E+	0	E-	E-	E-	E+/E-	E+	0	E-	E-	E-	0	0	0	0	0	0	0
Costs to Non-fishing Industries and Other Proponents of Affected Activities	Costs are generally increasing.	NA	U	E+/E-	U		E+	0	E-	E-	E-	E+/E-	E+	0	E-	E-	E-	0	0	0	0	0	0	0

Positive effect	NA = Not Applicable
Negative effect	U = Unknown Effect
Neutral/positive effect	0 = No Effect
Neutral/negative effect	E- = Negative Effect
	E+ = Positive Effect
	E- / E+ = Mixed Effect

Table 4.4-2. Recent Trends for Populations of Target Species in the GOA and BSAI

		Trend						
		Increasing	Recent Increase Following Decline	Stable	Recently Stable Following Increase	Recently Stable Following Decline	Decline	Recent Decline Following Increase
GOA	Walleye Pollock		X					
	Pacific Cod						X	
	Arrowtooth Flounder	X						
	Flathead Sole			X				
	Rex Sole			X				
	Deepwater Flatfish					X		
	Shallow-water Flatfish			X				
	Sablefish		X					
	Pacific Ocean Perch				X			
	Shortraker/Rougheye			X				
	Northern Rockfish						X	
	Dusky, Widow, Yellowtail						X?	
	Demersal Shelf Rockfish		X					
	Thornyhead Rockfish			X				
BSAI	Walleye Pollock			X				
	Pacific Cod					X		
	Yellowfin Sole					X		
	Greenland Turbot						X	
	Arrowtooth Flounder							X
	Rock Sole						X	
	Flathead Sole						X	
	Sablefish					X		
	Pacific Ocean Perch				X			
	Atka Mackerel					X		

Table 4.5-1. Comparative Summary of Effects of EFH Description Alternatives

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Habitat						
Prey species	E-	Ø	E+	E+	E+	E+/E-
Benthic biodiversity	E-	Ø	E+	E+	E+	E+/E-
Habitat complexity	E-	Ø	E+	E+	E+	E+/E-
Target Species						
Fishing mortality	Ø	Ø	Ø	Ø	Ø	Ø
Spatial/temporal concentration of catch	E+	Ø	E-	E-	E-	E-
Productivity	E-	Ø	E+	E+	E+	E+/E-
Prey availability	E-	Ø	E+	E+	E+	E+/E-
Growth to maturity	E-	Ø	E+	E+	E+	E+/E-
Economic and Socioeconomic Aspects of Federally Managed Fisheries						
Passive use	E-	Ø	E+	E+	E+	E+/E-
Gross revenue	U	Ø	U	U	U	U
Operating costs	E+/E-	Ø	E-	E-	E-	E-
Costs to consumers	U	Ø	U	U	U	U
Safety	Ø	Ø	Ø	Ø	Ø	Ø
Socioeconomic effects on fishing communities	E+/E-	Ø	E-	E-	E-	E-
Effects on regulatory and enforcement programs	E+	Ø	E-	E-	E-	E-
Other Fisheries and Fishery Resources						
Halibut, state-managed groundfish, state-managed crab, herring, salmon, forage fish, and other species	E-	Ø	E+	E+	E+	E+
Protected Resources						
ESA-listed salmon, marine mammals, and seabirds; other marine mammals; and other seabirds	E-	Ø	E+	E+	E+	E+
Ecosystems and Biodiversity						
Predator-prey relationships	U	Ø	U	U	U	U
Energy flow and balance	Ø	Ø	Ø	Ø	Ø	Ø
Biodiversity	Ø	Ø	Ø	Ø	Ø	Ø
Non-fishing Activities						
Costs to federal and state agencies	E+	Ø	E-	E-	E-	E+/E-
Costs to non-fishing industries or other proponents of affected activities	E+	Ø	E-	E-	E-	E+/E-

E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.5-2. Comparison of EFH Description Alternatives

Summary Factor	Alternative 1: No Action (no EFH designations)	Alternative 2: Status Quo/ General Distribution	Alternative 3: Revised General Distribution	Alternative 4: Presumed Known Concentration	Alternative 5: Eco-Region Strategy	Alternative 6: EEZ Only
Relative size of EFH designations	No EFH designations at all.	Existing EFH designations; relatively broad.	Somewhat smaller EFH designations for many species, representing the areas that comprise approximately 95% of the population.	Smaller EFH designations for most species, representing the areas that comprise approximately 75% of the population.	Broadest EFH designations of all the alternatives.	Smallest EFH designations of all the alternatives.
Consistency with the Magnuson-Stevens Act and the EFH regulations (50 CFR 600.815(a)(1))	Not consistent; fails to designate EFH.	Not consistent; relatively broad and risk averse approach, but does not use the most recent scientific information available.	Consistent; relatively broad and risk averse approach; includes more recent information than Alternative 2.	Consistent; narrower approach that more rigorously distinguishes habitat areas with the highest relative abundance of managed species.	Consistent; designates EFH based on assemblages of species that use similar habitat complexes.	Not consistent; fails to designate EFH in nearshore waters and rivers that are necessary for critical life stages of managed species.
Overall efficacy and relative merits	Not responsive to statutory and regulatory requirements.	Retains existing EFH designations; no change from the status quo.	Very similar to Alternative 2; applies more recent information and better mapping, resulting in geographically smaller EFH designations for some species; any actions to conserve EFH could focus on these smaller areas.	Similar to Alternatives 2 and 3 but uses a narrower interpretation of the available scientific information, resulting in smaller EFH designations for many species; any actions to conserve EFH could focus on these smaller areas.	Similar to the effects of Alternatives 2, 3, and 4, but uses a very different approach and results in broader EFH designations, making it harder to distinguish EFH from all potential habitats.	Identical to Alternative 3 for offshore waters; fails to designate EFH in nearshore waters and rivers, so not responsive to statutory and regulatory requirements.

Table 4.5-3. Comparative Summary of Effects for HAPC Identification Alternatives

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Habitat Habitat complexity Benthic biodiversity Prey species	E-	Ø	E+	E+	E+
Target Species Fishing mortality Spatial/temporal concentration of catch Productivity Prey availability Growth to maturity	E-	Ø	E+	E+	E+
Economic and Socioeconomic Aspects of Federally Managed Fisheries Passive use Gross revenue Operating costs Costs to consumers Safety Socioeconomic effects on fishing communities Effects on regulatory and enforcement programs	E+/E-	Ø	E+/E-	E+/E-	E+/E-
Other Fisheries and Fishery Resources Halibut, state-managed groundfish, state-managed crab, herring, salmon, forage fish, and other species	E-	Ø	E+	E+	E+
Protected Resources ESA-listed salmon, marine mammals, and seabirds; other marine mammals; and other seabirds	E-	Ø	E+	E+	E+
Ecosystems and Biodiversity Predator-prey relationships Energy flow and balance Biodiversity	E-	Ø	E+	E+	E+
Non-Fishing Activities Costs to federal and state agencies Costs to non-fishing industries or other proponents of affected activities	E+	Ø	E-	E-	E-

E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.5-4. Comparison of Alternative Approaches for Identifying HAPCs

Summary Factor	Alternative 1: No Action (no HAPC designations)	Alternative 2: Status Quo HAPC Designations	Alternative 3: Site-based Concept	Alternative 4: Type/Site-based Concept	Alternative 5: Species Core Area
Relative size of HAPC designations	No HAPC designations at all.	Quite broad: living substrates in shallow waters, living substrates in deep waters, and freshwater areas that support anadromous salmon.	Size depends upon future Council action.	Size depends upon future Council action.	Size depends upon future Council action.
Consistency with the EFH regulations (50 CFR 600.815(a)(8))	Consistent; does not lead to HAPC designations, but HAPCs are not a required component of FMPs.	Consistent; regulations allow designation of specific types of habitat within EFH as HAPCs.	Consistent; regulations allow designation of specific areas of habitat within EFH as HAPCs.	Consistent; regulations allow designation of specific areas of habitat within EFH as HAPCs.	Consistent; regulations allow designation of specific areas of habitat within EFH as HAPCs.
Overall efficacy and relative merits	Fails to take advantage of a tool available to the Council to highlight particularly valuable and/or vulnerable habitats within EFH.	Retains existing HAPC designations; however, the broad and general nature of the existing HAPCs may limit their efficacy.	Limits HAPC designations to specific sites, rather than permitting HAPC designations for general types of habitat wherever they may be found; could be more effective than Alternative 2 by virtue of being more focused.	May offer more potential benefits for target species than the other alternatives because the stepwise process of selecting habitat types and then specific sites could yield a more rational and structured effort to ensure that HAPCs focus on the habitats within EFH that are most valuable and/or vulnerable.	Limits HAPC designations to specific sites supporting habitat functions for individual target species; has the potential to benefit target species more directly than the other alternatives, although the paucity of scientific information about habitat requirements of individual species could limit the effectiveness of this approach.

Table 4.5-5. Comparative Summary of Alternatives to Minimize the Adverse Effects of Fishing on EFH

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Habitat							
Habitat complexity	Ø	Ø	E+	E+	E+	E+	E+
Benthic biodiversity	Ø	Ø	E+	E+	E+	E+	E+
Prey species	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Target Species							
Groundfish	Ø/U	Ø/U	Ø/U	Ø/U	Ø/U	Ø/U	Ø/U
Salmon	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Crabs	Ø	Ø	Ø	Ø/E+	Ø/E+	Ø/E+	Ø/E+/E-
Scallops	Ø/U	Ø	Ø	Ø	Ø	Ø	Ø/E-
Economic and Socioeconomic Aspects of Federally Managed Fisheries							
Passive use	Ø	E+	E+	E+	E+	E+	E+
Gross revenue	Ø	Ø	E-	E-	E-	E-	E-
Operating costs	Ø	E-	E-	E-	E-	E-	E-
Cost to consumers	Ø	E-	E-	E-	E-	E-	E-
Safety	Ø	E-	E-	E-	E-	E-	E-
Related fisheries	Ø	Ø	Ø	Ø	E-	E-	E-
Management and enforcement	Ø	E-	E-	E-	E-	E-	E-
Shoreside industries	Ø	Ø	Ø	Ø	Ø	Ø/E-	E-
Communities	Ø	Ø	Ø	Ø	Ø/E-	Ø/E-	E-
Other Fisheries							
State-managed groundfish	Ø	Ø	Ø	Ø	Ø	Ø	E
State-managed crab	Ø	Ø	E+	Ø	Ø/ E+	Ø/ E+	E-
Herring	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Halibut	Ø	Ø	Ø	Ø	Ø	Ø	E-
Protected Species							
ESA-listed mammals	Ø	Ø	Ø	Ø	Ø	Ø/E-	Ø/E-/U
Other mammals	Ø	Ø	Ø	Ø	Ø	Ø	Ø
ESA-listed salmon	Ø	Ø	Ø	Ø	Ø	Ø	Ø
ESA-listed seabirds	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Other seabirds	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Ecosystems							
Predator-prey relationships	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Energy flow and balance	Ø	Ø	Ø	Ø	Ø	Ø	Ø
Diversity	Ø	Ø	E+	E+	E+	E+	E+

E- = Effect negative, Ø = No effect, E+ = Effect positive, U = Unknown

Table 4.5-6. Summary Comparison of Environmental Effects of the Alternatives to Minimize the Adverse Effects of Fishing on EFH

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Habitat	No substantial adverse effects are anticipated. Fishing activities do not affect EFH in a manner that is more than minimal and temporary in nature.	Small trawl closures to rockfish on GOA slope would have no substantial effects on habitat.	Closure of GOA slope to rockfish trawling would have positive effects on epibenthic structures and coral on GOA slope.	Bottom trawl closures would have positive effects on protection of coral in the AI area. Gear modifications may have a positive effect on epibenthic structures in BS. Small trawl closures on GOA slope to rockfish fishing would have no substantial effects on habitat.	Bottom trawl closures would have positive effects on epibenthic structure and coral in GOA; substantially improved protection of coral in the AI would occur. Gear modifications may have a positive effect on epibenthic structures in BS.	Same effects as Alternative 5A in GOA and BS would occur. The substantially larger closures in AI would provide more protection of coral and epibenthic structures.	Closures to bottom tending gear would have moderately positive effects on epibenthic structures in all areas and positive effects on the protection of coral on the AI and GOA slope areas.
Target Species	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated. Bering Sea closures may benefit growth of snow crabs.	Same effects as Alternative 4 would occur.	Same effects as Alternative 4 would occur.	For most species, no substantial effects are anticipated. Negative effects are anticipated for scallops and some crabs.

Table 4.5-6. Summary Comparison of Environmental Effects of the Alternatives to Minimize the Adverse Effects of Fishing on EFH (continued)

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Economic and Socioeconomic Aspects of Federally Managed Fisheries	No substantial effects are anticipated.	Gross revenue at risk is < $ 1 million. Slight increases in costs (operating, consumer, management, enforcement) expected. No effects on communities are expected.	Gross revenue at risk is $ 2.6 million. More increases in costs and reduction in safety are expected. No effects on communities are expected.	Gross revenue at risk is $ 3.5 million. Even more increases in costs and reduction in safety are expected. No effects on communities are expected.	Gross revenue at risk is $ 7.9 million. Even more increases in costs and reduction in safety are expected. Negative effects on western GOA communities are expected.	Gross revenue loss of $15.2 million would occur due to AI TAC reduction, in addition to $ 7.9 revenue at risk in GOA and BS. Even more increases in costs and reduction in safety would be expected. In particular, monitoring and enforcement costs would greatly increase. Negative effects on Western GOA communities are expected.	Gross revenue at risk is $236 million. Increases in costs and a reduction in safety of smaller fixed-gear vessels are expected. Negative effects on Alaska coastal communities dependent on fishing are expected.
Other Fisheries	No substantial effects are anticipated.	Some slight positive effects to GOA deepwater Tanner crabs and golden king crabs are expected.	Same as Alternative 2, but slightly more benefits are expected.	Same as Alternative 2.	Same as Alternative 3.	Same as Alternative 3.	Would reduce revenue of halibut and state groundfish and crab fisheries.

Table 4.5-6. Summary Comparison of Environmental Effects of the Alternatives to Minimize the Adverse Effects of Fishing on EFH (continued)

Category of Effect	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5A	Alt. 5B	Alt. 6
Protected Species	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	No substantial effects are anticipated.	Steller sea lion foraging success in AI may be impacted by spatial and temporal concentrations of fishing effort in nearshore areas.	Steller sea lion foraging success in AI may be impacted by spatial and temporal concentrations of fishing effort in nearshore areas.
Ecosystems	No substantial effects are anticipated.	No substantial effects are anticipated.	Trawl closure areas may have a positive effect on diversity in GOA.	Positive effects on diversity are expected in GOA, BS, and AI areas.	Alternative 5A would have slightly more benefits to diversity than Alternative 4 due to larger closure areas.	Similar to Alternative 5A, but slightly more benefits would occur in the AI area.	Closures to bottom tending gear would have positive effects in GOA, BS, and AI areas.

Table 4.5-7. Synopsis of Habitat Benefits and Economic Costs of Alternatives to Minimize the Adverse Effects of Fishing on EFH

	Percentage of Fishable Waters Closed[1] (in addition to existing closures)			Relative Sensitivity of Protected Habitats (Based on LEI Scores)					Annual Revenue At Risk (in millions)					
Alt.	**GOA**	**BS**	**AI**	**GOA**	**BS**	**AI**	**Other Habitat Measures[2]**	**TOTAL ADDED BENEFITS[3]**	**GOA Ground-fish**	**BSAI Ground-fish**	**Crab**	**Scallop**	**Halibut**	**TOTAL COSTS[4]**
1	0%	0%	0%	–	–	–	–	**–**	$0	$0	$0	$0	$0	**$0**
2	3.6%	0%	0%	High	–	–	–	**very low**	$1	$0	$0	$0	$0	**$1**
3	10.4%	0%	0%	High	–	–	–	**low**	$2.7	$0	$0	$0	$0	**$2.7**
4	3.6%	6.0%	19.7%	High	Low	High	gear	**medium**	$0.9	$2.6	$0	$0	$0	**$3.5**
5A	11.4%	8.0%	30.6%	High	Low	High	gear	**med/high**	$3.6	$4.3	$0	$0	$0	**$7.9**
5B	11.4%	8.0%	77.9%	High	Low	High	gear TAC bycatch	**highest**	$3.6	$19.5	$0	$0	$0	**$23.1**
6	17.4%	17.0%	19.7%	L/M/H[5]	L/M/H	L/M/H	–	**medium**	$163.8	[6]	$34.1	$1	$38.3	**$237.2**

NOTES:
1. Fishable waters are defined as those waters < 1000 m within the historic effort distribution. Closures are for bottom trawling, except for Alternative 6, which closes areas to all bottom tending gear (dredges, bottom trawls, pelagic trawls that contact the bottom, longlines, dinglebars, and pots).
2. In addition to closure areas, Alternatives 4, 5A, and 5B include restrictions on configuration of bottom trawl sweeps and footropes. Alternative 5B also includes TAC reductions for AI mackerel, cod, and rockfish, as well as bycatch limits for bryozoans/corals and sponges.
3. Alternatives were ranked relative to the status quo and the alternative with the highest benefits to EFH.
4. Total costs (direct loss and at-risk loss to gross revenue) reflect the long- and short-term costs to assist in assessing practicability, but do not include any long-term benefits of increased catches that might be attributable to habitat protection, because sufficient information does not exist to estimate any such benefits.
5. L/M/H: L = low; M = medium; H = high
6. BSAI groundfish revenue at risk included with GOA

Table 4.5-8. Total Area Closed on a Year-round Basis, by Gear Type and Depth, for the Alternatives and Pre-Status Quo Baseline

Measures	Baseline	Alternative 1 Status Quo	Alternative 2 GOA Slope Trawl Closures	Alternative 3 Bottom Trawl Prohibition for GOA Slope Rockfish	Alternative 4 Bottom Trawl Closures	Alternative 5 Extended Bottom Trawl Closures	Alternative 5B Prohibit Trawling in AI Coral/Sponge Areas	Alternative 6 Closures to All Bottom Tending Gear
Area closed to bottom trawling year-round:								
Shelf & upper slope (<1,000m)								
Bering Sea	0nm²	30,000nm² (12.9 %)	30,000nm² (12.9 %)	30,000nm² (12.9 %)	63,014nm² (27.1%)	67,677nm² (29.1 %)	67,677nm² (29.1%)	55,610nm² (23.9 %)
Aleutian Islands	0nm²	16,349nm² (53.4 %)	16,349nm² (53.4 %)	16,349nm² (53.4 %)	23,012nm² (75.1 %)	25,735nm² (84.0 %)	30,133nm² (98.3 %)	19,391nm² (65.6 %)
Gulf of Alaska	0nm²	15,929nm² (19.5 %)	18,907nm² (23.1%)	24,390nm² (29.8 %)	18,907nm² (23.1 %)	25,219nm² (30.8 %)	25,219nm² (30.8 %)	23,087nm² (28.2 %)
Lower slope & basin (>1,000m)								
Bering Sea	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	57,835nm² (94.6%)	58,047nm² (95.0%)	58,047nm² (95.0%)	2,951nm² (4.8%)
Aleutian Islands	0nm²	1,037nm² (0 %)	1,037nm² (0 %)	1,037nm² (0 %)	21,531nm² (8.2%)	80,692nm² (30.8%)	260,141nm² (99.4%)	17,841nm² (6.8%)
Gulf of Alaska	0nm²	40,674nm² (4.2 %)	41,126nm² (4.2 %)	71,388nm² (7.4 %)	41,126nm² (4.2%)	72,643nm² (7.5 %)	72,643nm² (7.5 %)	0nm² (0 %)
TOTAL	0nm²	103,989nm² (6.4%)	91,490nm² (5.6 %)	127,235nm² (7.8 %)	226,432nm² (13.8%)	331,020nm² (20.2%)	513,783nm² (31.4%)	118,850nm² (7.3%)
Area closed to all bottom tending gear:								
Shelf & upper slope (<1,000m)								
Bering Sea	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	39,610nm² (17.0%)
Aleutian Islands	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	6,036nm² (19.7 %)
Gulf of Alaska	0nm²	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	18,052nm² (22.0%)
Lower slope & basin (>1,000m)								
Bering Sea	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	2,951nm² (4.8%)
Aleutian Islands	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	16,774nm² (6.4 %)
Gulf of Alaska	0nm²	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)	0nm² (0 %)
TOTAL	0nm²	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	2nm² (0 %)	83,423nm² (5.1 %)

NOTES: Total area within regions and depth zones is as follows. For areas < 1,000 m: Bering Sea = 232,616nm², Aleutian Islands = 30,654nm², GOA = 91,914nm²; for areas > 1,000 m: Bering Sea = 61,121nm², Aleutian Islands = 261,739nm², GOA = 969,010nm².
Closure areas are calculated based on the amount of area closed to directed fishing for at least one target species (e.g., some SSL closures in AI) year-round, as well as areas closed to all trawling on a year-round basis.

Table 4.5-9. Major Differences between the Alaska Groundfish Fisheries PSEIS and the EFH EIS

	PSEIS	EFH EIS
Purpose and Need	Conduct programmatic review of BSAI and GOA groundfish FMPs and their effects on the marine ecosystem.	Review current EFH designations for managed species, identify HAPCs, and minimize adverse effects of fishing on EFH for groundfish, crabs, salmon, and scallops.
Action	Broad scope: Reauthorize all groundfish fisheries under MSA, ESA, MMPA, and other applicable law; set policy.	Narrow scope: Consider revising EFH designations; consider mitigation measures and their likely effects; adopt regulations.
Alternatives	Establish broad multi-objective policies.	Employ alternative EFH designations, approaches to identifying HAPCs, and mitigation measures.
Source of closed areas used in analysis	Based on public comments on 2001 draft PSEIS, EFH Committee (Fall 2002) concepts, internal analysis.	EFH Committee (finalized by NPFMC in April 2003).
Legal Authority	Under MSA, agency can take action to protect habitat even if not specified as EFH.	Under MSA, agency must minimize to the extent practicable adverse effects of fishing on EFH.

Table 4.5-10. Differences in Data and Methods for Habitat Effect Analysis and Evaluation Issues

	PSEIS	EFH EIS
Input Data Source	Bottom trawl only	Trawl, pot, and longline
Years	1997 to 2001	1998 to 2002
Fishery Class	Trawl	By target species and gear
Living Substrate Recovery Time (soft bottom)	2 and 15 years	3.8, 5.5, and 10 years
Coral Recovery Time	200 years	50, 100, and 200 years
Habitat Issues	Living habitat mortality/damage, including coral Benthic community and geographic impact diversity	Prey availability Epibenthic structure Coral
Managed Fish Habitat Issues	Habitat suitability	Spawning/breeding Feeding Growth to maturity